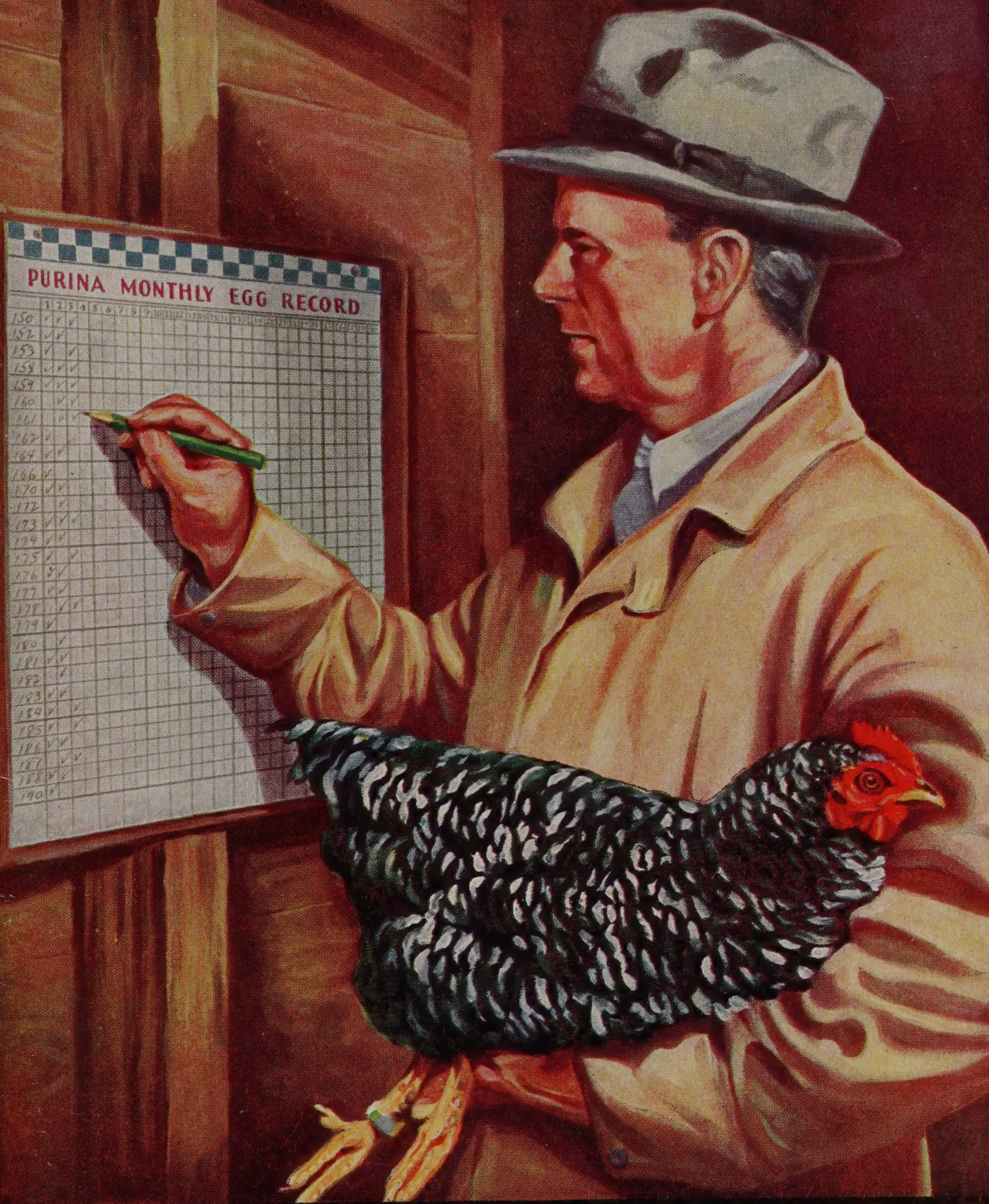




PURINA MONTHLY EGG RECORD

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Purina **POULTRY BOOK**



TURN CHICKS INTO LAYERS

THE PURINA WAY!

**2 Lbs. of Startena
and
16 Lbs. of Growena—**

that's all it takes to grow
a baby chick into a big,
sturdy pullet, ready to lay!

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P3358B—1-39 Printed in U. S. A.





Making a Business Out of Poultry Raising!

TIMES HAVE CHANGED in the poultry industry. Many poultry raisers are today finding new ways to increase their profits. Even though their main source of income is from market eggs, they have found they can diversify their business and make more money.

This is just one of the new trends in poultry raising which helps to make it a more profitable enterprise. We have tried to gather a number of these suggestions and include them in this book. All theory has been left out. We have included only ideas and suggestions that have been proven by thousands of successful poultry raisers.

Poultry raising today is the second largest industry in the agricultural field. It provides all or part of the income for millions of people. It also provides one of the most appealing of all hobbies around a home or on the farm. It is our sincere hope that this book may help to make poultry raising more pleasant and profitable to you.

ROUND OUT YOUR

1. MARKET EGGS

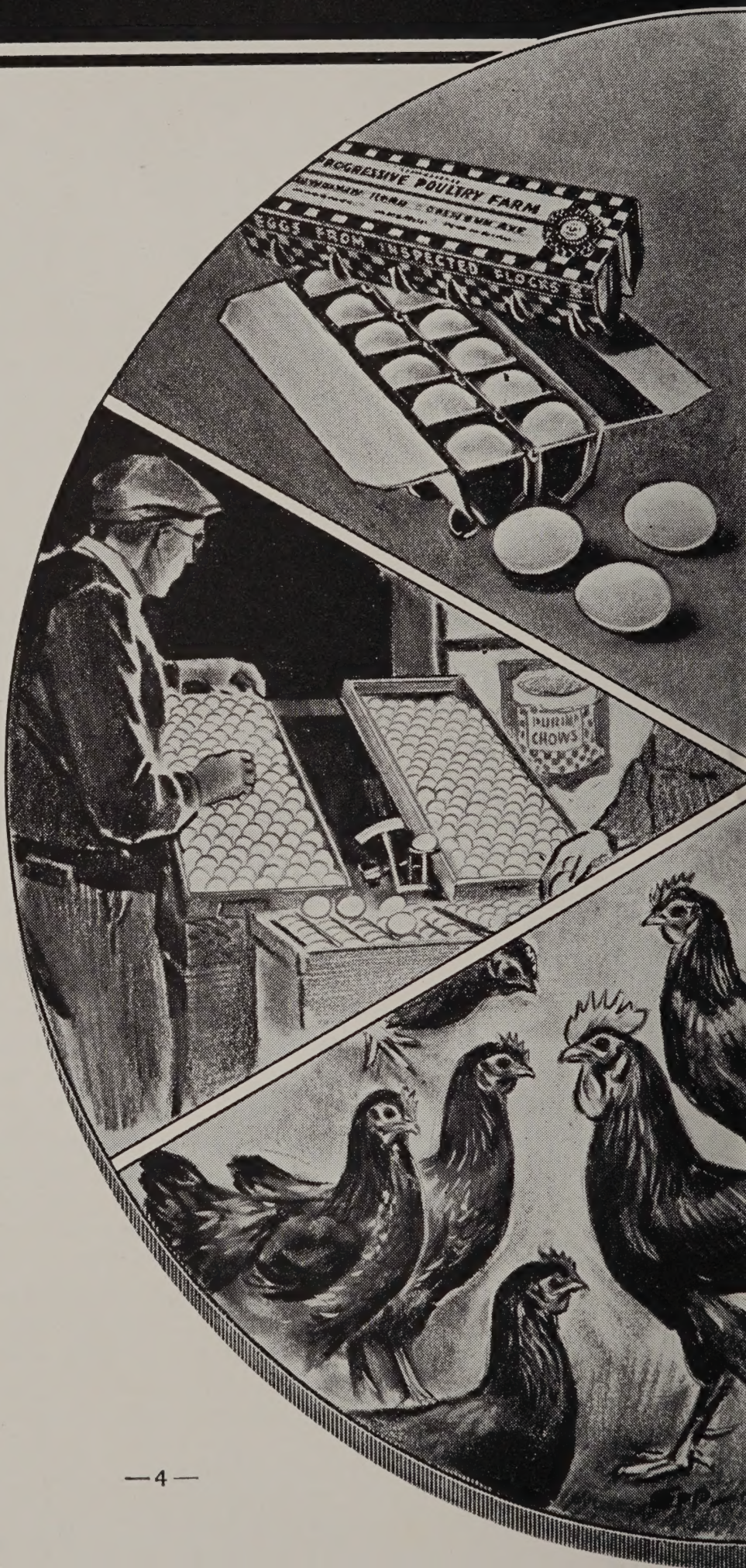
Many poultry raisers today are making extra money by producing quality eggs and selling them for a premium price. Housewives are demanding eggs of improved, controlled interior quality. By producing eggs of this type and finding a market for them, the average poultry raiser can get several cents a dozen more for his eggs. Purina Layena, the complete all-in-one laying feed, is the feed that has been built especially to produce table eggs of superior quality.

2. HATCHING EGGS

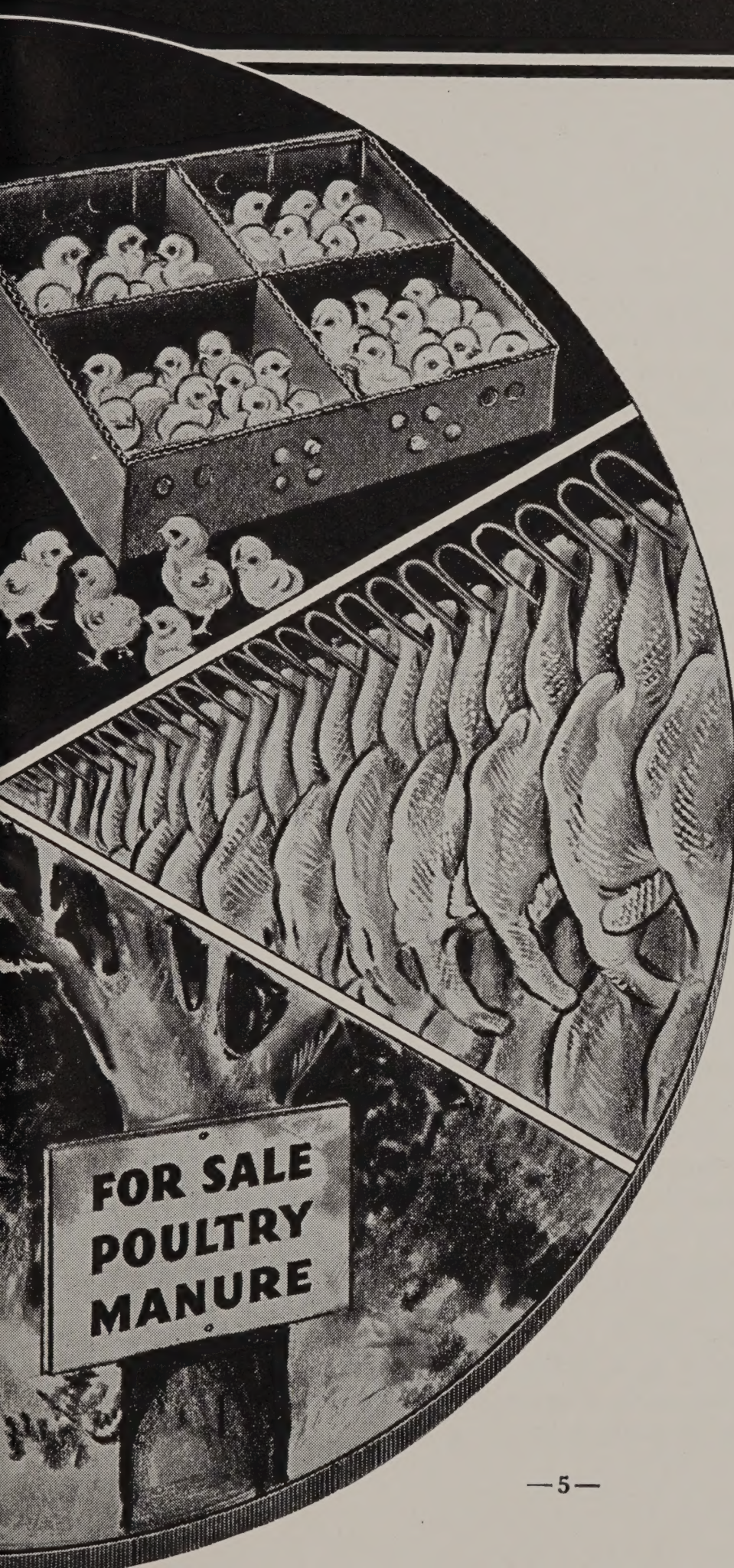
The poultryman who has well-bred stock and takes pains to get good cockerels, can easily make extra money by producing hatching eggs several months out of the year. The better hatcheries are anxious to get eggs from well-bred, well managed and properly fed flocks. Instead of lasting only a few months, the hatching season now extends in many cases throughout the entire year. Many hatcheries are today paying a special premium for eggs from Purina-fed flocks.

3. BREEDING STOCK

The sale of breeding stock can bring a nice increase to the income of the poultryman who establishes a reputation for high egg production, as well as strong, vigorous birds. In order to sell breeding stock, it is necessary to trapnest the layers from which this stock is produced, but the cost of trapnesting is offset by increased production and extra income from the sale of breeders.



POULTRY PROFITS!



4. BABY CHICKS

Because of the growing demand for chicks for raising broilers and also for pullets coming into production at several different times of year, there is more and more demand for chicks all year 'round. Through following the Purina embryo feeding plan, many poultrymen today are increasing the hatchability of their eggs and producing stronger chicks which will sell for more money.

5. BROILERS

Broiler raising has increased by leaps and bounds during the last few years. An increasing demand has sprung up all over the country for freshly killed, fine quality broilers. Many of our larger cities today have an established premium market for birds of this type and commercial broiler raising has become a profitable enterprise. Since a complete crop of broilers can be raised in from 8 to 14 weeks, they represent a quick turnover and a chance to make immediate money.

6. POULTRY MANURE

Truck gardeners and fruit growers have found that where a good poultry litter is used, poultry manure is a valuable fertilizer. Many poultry raisers are today getting as high as \$20.00 to \$30.00 a ton for poultry manure which has been carefully handled and protected from the effect of rain and weather which destroy considerable of its value.

Plan for Insuring Poultry Profits

THE AVERAGE POULTRYMAN is asking himself this question, "How can I be sure that I will make money out of poultry raising?" Naturally, there are no short cuts to quick profits. There are, however, definite things a poultryman can do which will guide him in the right direction and be a real help toward making poultry raising really profitable to him.

1. Diversification. Just as diversified farming has largely replaced the old system of "one crop farming," diversified poultry raising is the salvation for many a poultry raiser. The plan outlined on the last two pages can be applied on many poultry farms and will help greatly to bring year 'round profits.

2. Improved Quality of Products. There is a definite demand for better quality products. Market eggs, hatching eggs, poultry meat, and breeding stock—all can be sold for premium prices if the quality is there. The poultryman who today produces average products must be satisfied with average profits. The man who takes special pains to produce better than average products can make better than average profits.

3. Uniform Volume. Many poultry raisers have built up a market for their eggs, then have lost the market because they were unable to produce enough eggs to satisfy it. In other words, when all pullets come into production at the same time, there are bound to be peaks and hollows in the yearly egg production. Commercial poultrymen are getting around this by hatching chicks two or three times during the year, which helps to level off egg production and maintain a steady year 'round supply of eggs. Producers of baby chicks are also hatching over a longer period which brings them a steadier income throughout the year.

4. Salesmanship on Part of Poultry Raisers. The average poultryman does a far better job of producing eggs or poultry meat than he does of selling them. There is a real opportunity today for a poultryman to develop into a better salesman and do a better job of merchandising his products. Quality products, packed in attractive containers and brought to the attention of the consumer along with the outstanding selling points about them, will bring premium prices and make extra money for the poultryman. The new Layena egg plan, which is outlined on page 46 of this book, offers an excellent opportunity for a poultryman to do a better job of selling his eggs. Get the details of this plan from your Purina dealer and cash in on the opportunity to make extra profits.

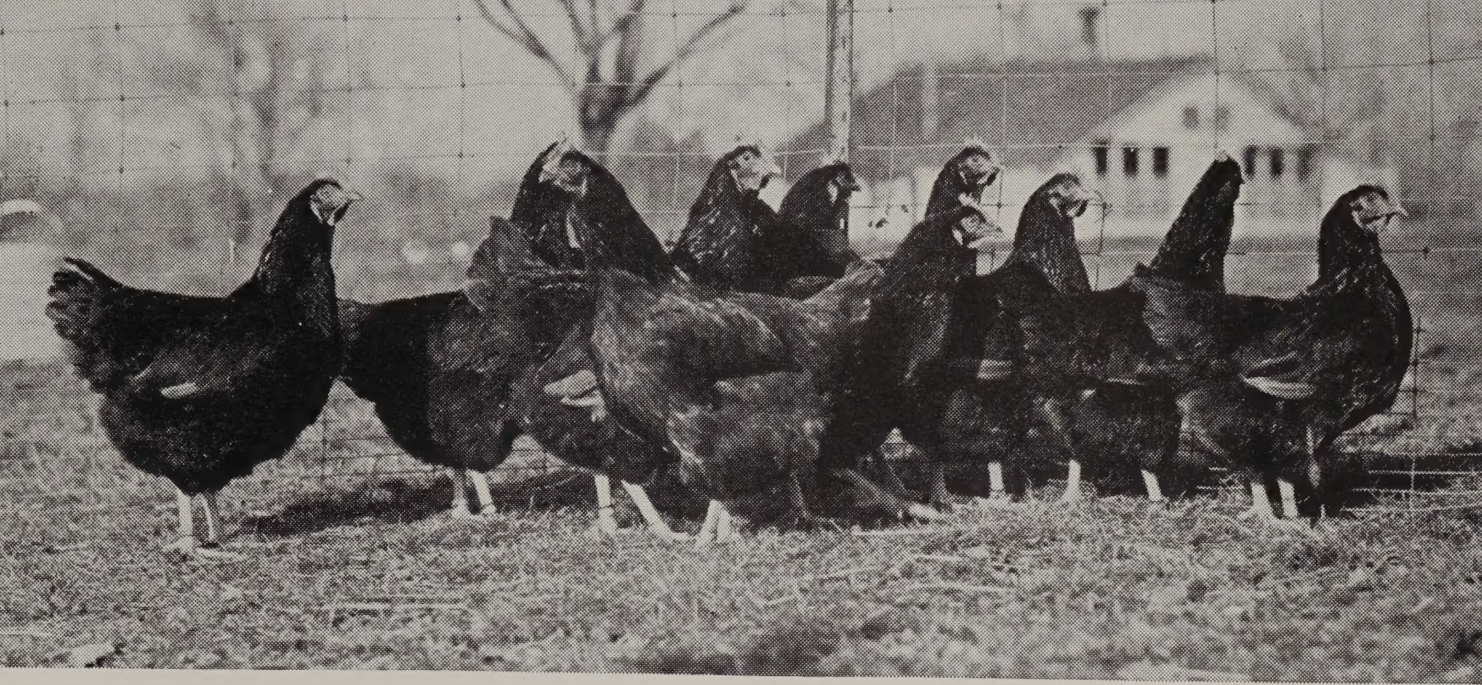


Photo Courtesy Booth Poultry Farms, Clinton, Mo.

Good Breeding Stock is the Basis of Success

THE HEN that is bred to lay 100 eggs can never lay 200 eggs or even 150 eggs. The best feeding and management program known cannot make her do it. Neither will birds from weak or diseased breeding stock develop and produce properly. Most poultry raisers now realize this.

The breeding stock behind the chicks you buy is vitally important. The safest way to make sure that the breeding stock is right is to depend upon the reliability of your breeder or hatcheryman. There are certain things you should look for in buying baby chicks — such as vitality, breed characteristics, uniform size, uniform color, freedom from disease and the ability to live and grow. These features are largely the result of good breeding and will usually be found in all chicks produced by well bred and carefully tended flocks. These should be the kind of flocks from which your hatcheryman gets his hatching eggs.

The laying ability of the flock which laid the hatching eggs determines the future laying ability of the chicks. This ability is bred into the flocks by the careful mating of breeders from high egg record stock to large, vigorous males out of heavy laying dams. It takes healthy, vigorous, large size breeders with plenty of stamina to develop heavy egg laying ability.

The Feed the Breeding Flock Ate Is Important

Another feature which recent developments have shown is of utmost importance to poultry profits is the right feeding of the flocks producing the hatching eggs. Baby chicks start growing in the shell on the first day of incubation. By the 21st day they should be large and strong enough to crack their shell and step out.

The chicks you buy this year won't be day-old chicks. They'll be 22 days old. Actually, chick life begins shortly after the egg is placed in the incubator. Just think of all the food material that must be in the hatching egg! Proteins, carbohydrates, minerals, vitamins — enough of them for the chick to live and grow on for the 21 days before it's hatched. And even after the chick is hatched it must have a reserve supply of unabsorbed yolk in its body to carry it through the first few days.

Now a hen can get this chick-making material from just one source—her feed. If only one necessary ingredient is lacking, you get an inferior chick.

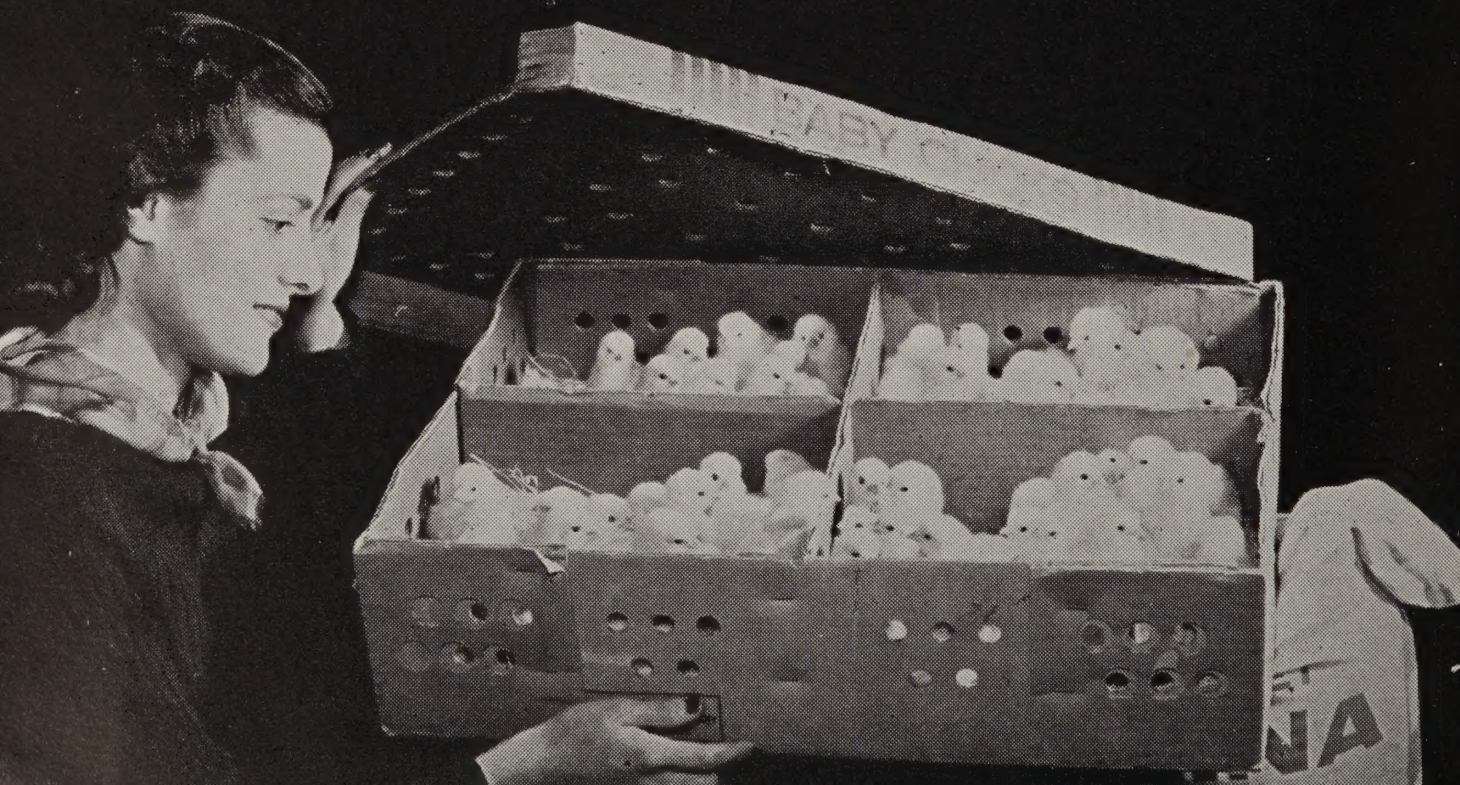
Embryo feeding is a fairly new development in the hatching industry. Its value has been thoroughly proved, though, so watch this point closely when you select your hatcheryman.

Quality Chicks Are Worth the Extra Cost

The actual job of incubating the eggs is really one of the hatcheryman's least worries. Automatic devices have just about made the modern incubator fool-proof. Hence, a hatcheryman should not be judged solely by the size of his incubator or by the elaborateness of his equipment. Neither does the price of the chicks determine their quality, although a quality chick is certainly worth much more than a cheap, unreliable chick.

In selecting a hatcheryman, you must look behind the scene. Find out how his eggs are produced. See how his chicks turned out last year. Ask your neighbors what their experience with this hatcheryman has been. Remember, *the kind of chicks you get is largely determined by the breeding and feeding of the parent flocks, before the eggs ever go into the incubator.*

Quality chicks are the result of good breeding, proper feeding of the breeder flocks, proper care of hatching eggs and correct incubation.





Long brooder house or permanent type of brooder house, which is popular with many poultry raisers. The other popular type is the 10' x 12' colony house.

Good Chicks Deserve Good Care

THE BIG THING in brooding chicks is not how many chicks you start or even the percentage of chicks you keep alive, but how many good pullets you will have in the fall. Most folks start about twice as many chicks as they can handle. They get along all right while the chicks are small, but when the chicks are 6, 8 and 12 weeks old they don't have the houses or facilities to care for them properly.

Choose the Right Type Brooder House

Many poultrymen today favor a permanent type of brooder house over portable colony brooders. The reason is that lack of ground makes it hard to find new locations for the portable brooder house each year. The permanent type of brooder house is usually equipped with a concrete runway, wire sun parlor or with inside runways where the chicks can be carried through without ranging until they're old enough to require no artificial heat.

The most common of colony house is the shed roof, 10x12, colony type. This size brooder allows for moving the unit to a new range by pulling it on its own "skids" or on a separate set of "skids" specially built to haul colony houses about. Separate "skids" put less strain on the frame-work of the house. Such a house cares for 200-250 chicks comfortably. It can be loaded to 300, if the chicks are allowed range in two weeks.

Care of chicks is mighty important during the first few weeks. On the following pages you will find a number of proven suggestions on how you can raise more chicks and better chicks.



1. Clean the Brooder House Thoroughly

Parasites and disease germs thrive in dirt that sticks to the walls and in the corners of the brooder house. Clean and disinfect the brooder house thoroughly before you put your chicks into it. Sweep off the walls and floor and then scrub them with hot water to which a quarter of a pound of lye has been added for each 7 gallons of water. When it gets dry, disinfect the entire house with a Purina Cre-so-fec solution. One-fourth cup of Cre-so-fec to 10 quarts of water is strong enough.

2. Kill Disease Germs with Cre-so-fec

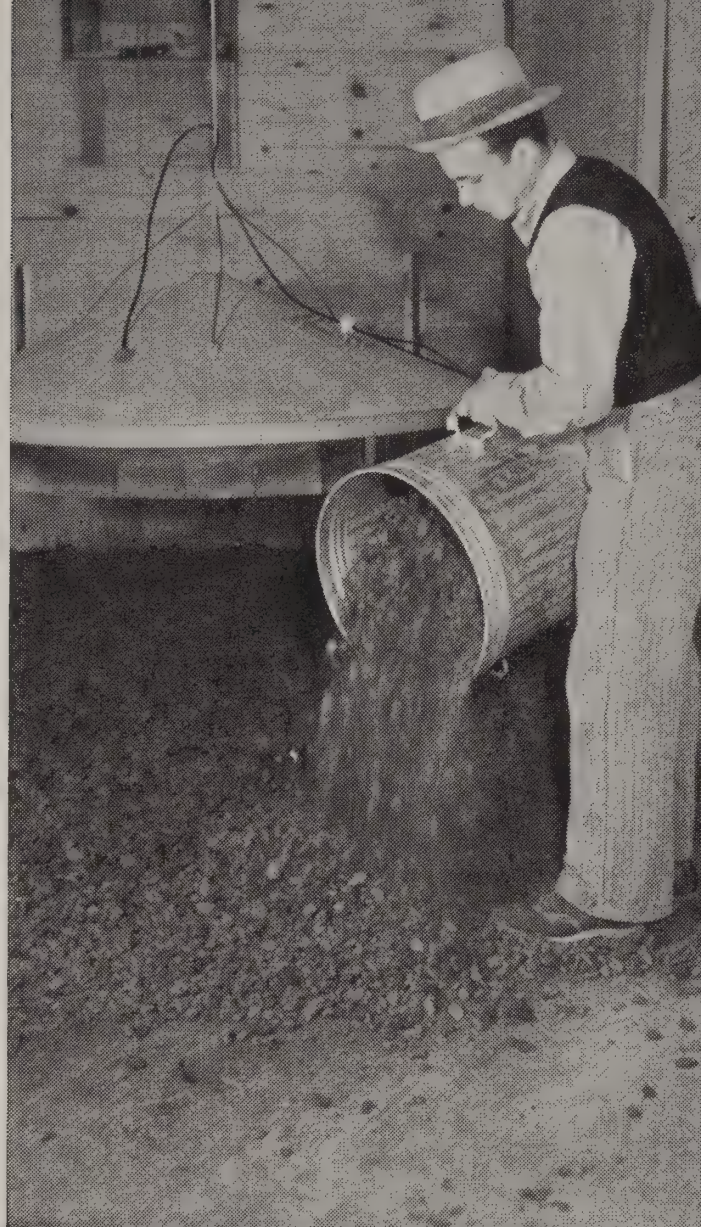
Purina Cre-so-fec is easy to use. Just mix up the solution in a bucket or small tub and dip a broom into it. Use plenty of the solution, forcing it into all cracks in floor and walls. Or, this solution may also be used in a hand sprayer.

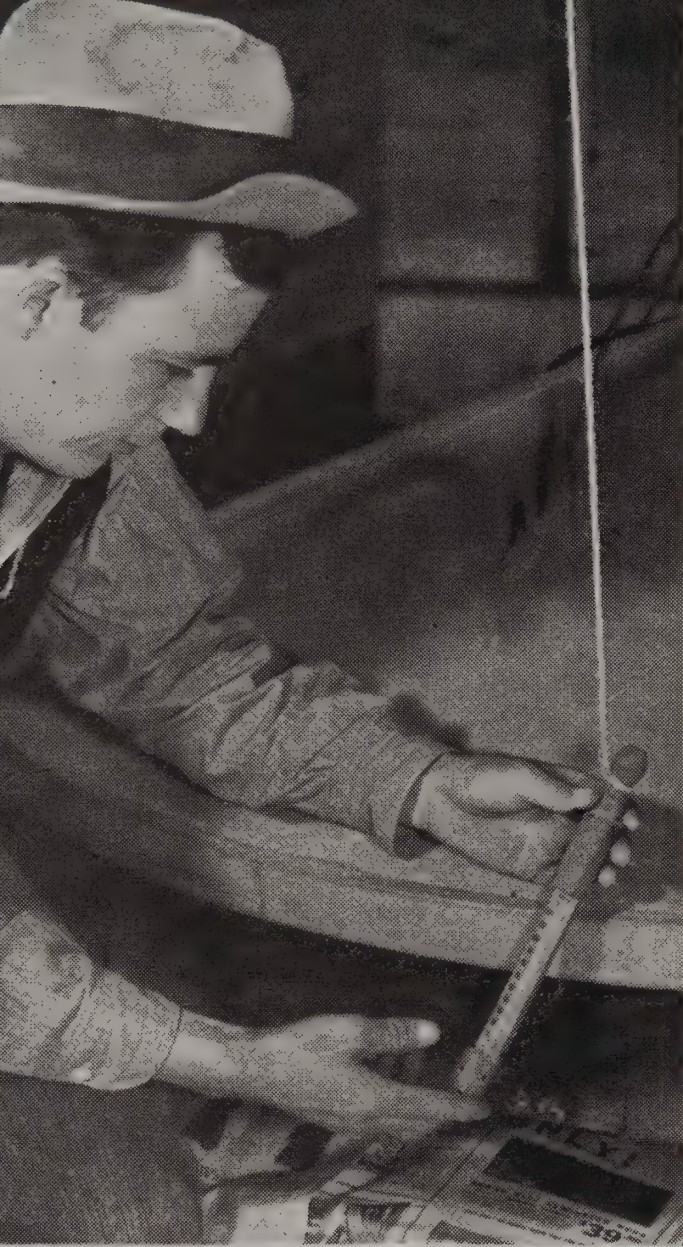
3. Provide Good Litter

Several kinds of litter may be used, but peat moss and soft wood shavings are probably the most popular. Both are light enough to let the droppings sift through. Stir up the litter every day or two and add fresh litter every 3 or 4 weeks. Change the litter whenever new litter is needed. ▶

4. Spread Paper Over the Litter

Before the chicks learn how to eat out of the hopper they sometimes try to pick up some of the litter. For this reason it's a good idea to spread about three thicknesses of paper over the litter. Newspapers can be used, or brown wrapping paper or building paper. One sheet can be taken up every day, leaving a clean covering. All the paper can be removed after the second or third day. Some poultrymen teach their chicks to eat by scattering a little feed on the papers covering the litter or by placing feed in paper plates close to the hover. ▼





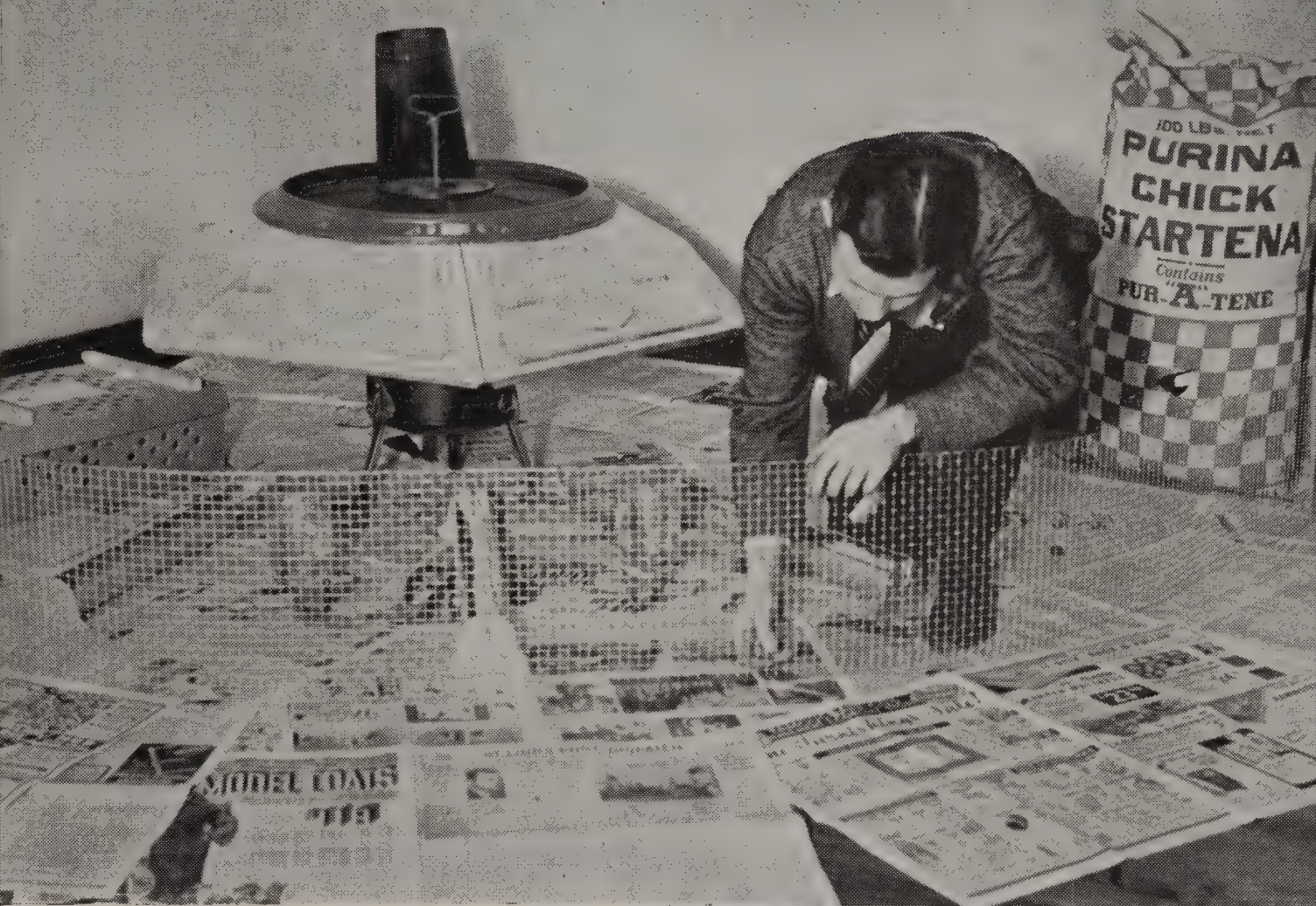
5. Regulate Temperature

Hang the thermometer about 6 inches from the hover and about 4 inches off the floor. Test the brooder stoves carefully before the chicks arrive. Keep the temperature about 92 degrees for the first two days, and gradually lower it to 80 or 85 degrees by end of second week.

6. Arrange Hoppers and Water Troughs Properly

As shown in the picture, the feed hoppers and drinking fountains should be in front of the hover, toward the front windows. This encourages the chicks to eat and drink. Adding fresh feed or stirring the feed also attracts the chicks and gets them to eat more. Clean the feed hoppers at least once a week. Clean the drinking fountains every day as food particles drop into the water and sour. Two measuring spoons of Chlorella powder in 3 gallons of water may be used to disinfect both the water fountains and the feed hoppers.





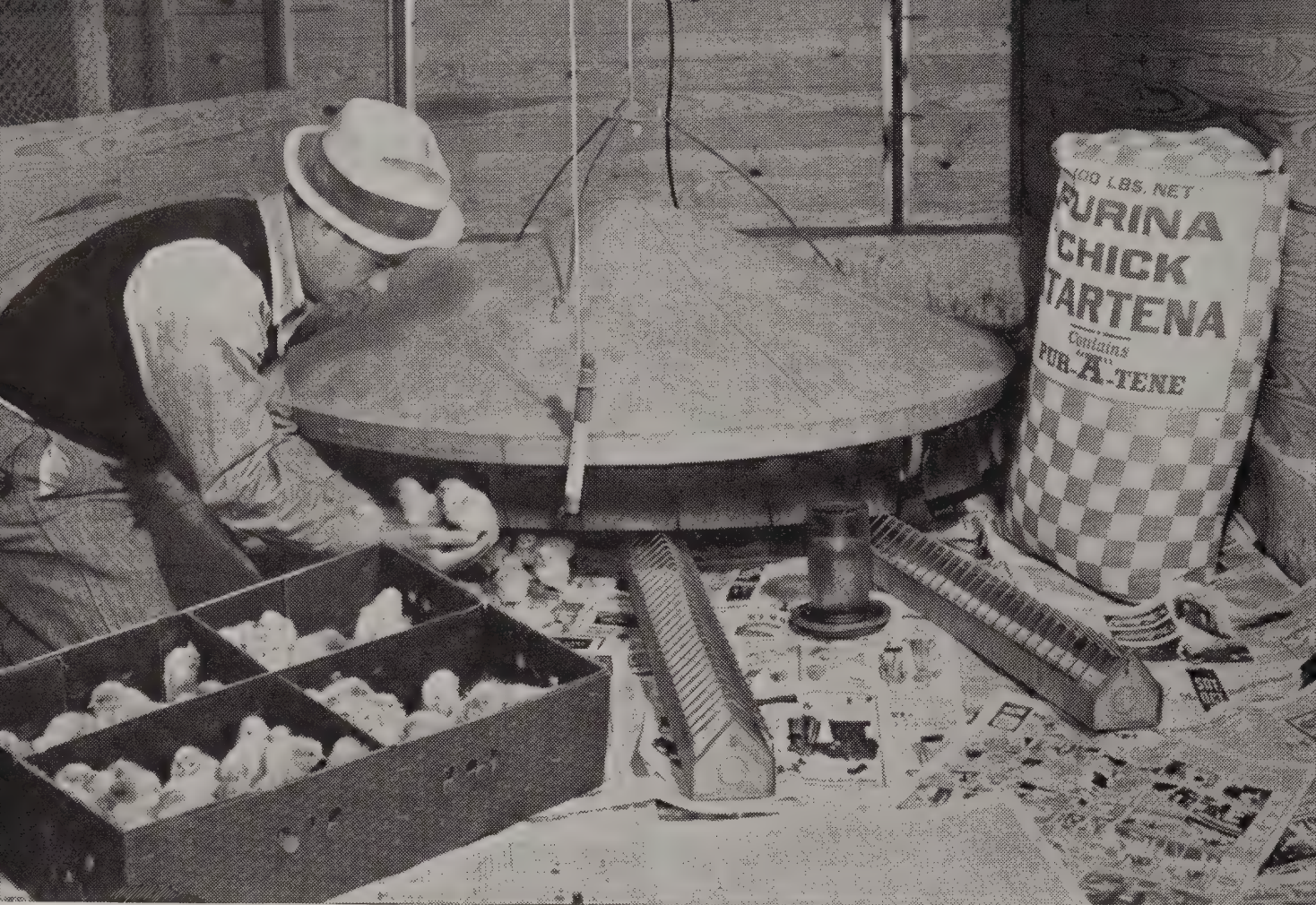
7. Keep Chicks Close to the Hover

It's a temptation for some of the chicks to huddle in a dark corner of the brooder house. As they might chill that far away from the hover, it's a good idea to build a fence around the hover. Pieces of boards or a low circle of mesh wire around the hover will do the job. When the chicks grow older, you can move the fence farther from the hover, and finally remove it entirely after the first week. This plan gives the chicks a chance to get used to a cooler temperature gradually.

8. Prevent Spread of Disease

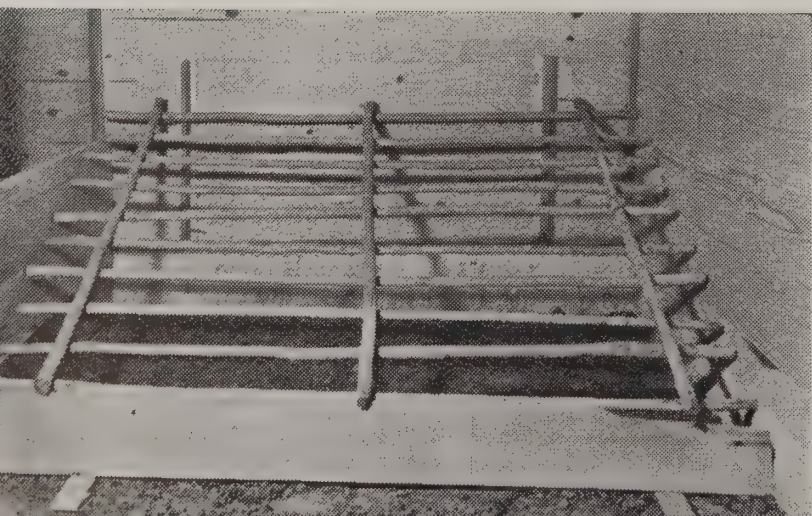
In order to help prevent the spread of disease from one chick to another, add Purina Chlorena Powder to the drinking water, using one-fourth spoon of Chlorena Powder in 10 quarts of water. Keep the baby chick drinking water slightly warm during the first 5 days.





9. Ready to Give the Chicks a Good Start

Note in the above picture that everything in the brooder house is ready before the chicks arrive. The house is clean and thoroughly disinfected, newspapers are spread over the litter, the water fountains are close to the hover, and the feed hoppers are full of Purina Chick Startena. The bag of Purina Startena you see in the picture will be set up on a box to keep it off the floor which may become damp after the chicks are in the house. The chicks are now “ready to grow.” This fellow means business. It won’t be “just luck” when his chicks grow into strong, healthy, money-making pullets. It’ll take some unusually “bad luck” to keep them from it.



10. Provide Roosts at 3 to 4 Weeks

When the chicks are about 3 weeks old, set up some narrow (1 x 2 inch) strips of wood for them to roost on. Let the frame lie flat on the floor for a few days, and then raise the rear end about 5 inches. Box up the front of the roost and put about 1-inch mesh wire just below the slats so the chicks can’t get under the roost into the droppings. About a week later raise the rear end 8 or 10 inches higher. Some poultrymen have their roosts hinged to the side of the house, 8 or 10 inches above the floor.

Other Management Suggestions

Avoid Crowding — Crowding in the house or crowding at roosting time or any change in feeding that allows the birds to even temporarily stop growing may have a very detrimental effect on the chick throughout its entire life. Don't try to raise more than 200 to 300 chicks in a 10' x 12' brooder house. One of the best ways to avoid crowding and piling is to have low slatted roosts in the brooder house early.

Provide Fresh Water — Chicks need plenty of fresh, clean water and you can add to their growth and the effectiveness of their feed by making it convenient for them to drink frequently. Provide one-gallon drinking fountains for each 50 chicks and be sure to keep them filled at all times. To aid in preventing disease, add one-fourth measuring spoon of Purina Chlorena Powder to each ten quarts of water.

Insulation — Many poultry raisers have found that it pays to insulate their brooder houses against sudden changes in temperature. Insulation helps to keep the heat in the house and makes it much easier to maintain a uniform temperature.

Ventilation — A stuffy, poorly ventilated brooder house often leads to respiratory trouble in chicks. The warm, foul air should be taken out near the top of the house. The thing to avoid is air blowing directly on the chicks, or drafts across the floor.

Feeder Space — Baby chicks need plenty of feed hopper space. A two-foot hopper feeding from both sides will handle about 50 chicks, up to the time they are three to four weeks old.

Watch out for "Gassing Chicks" — Each year, thousands of chicks die from gas from brooder stoves. No matter what type of stove you use, be sure there is an outlet provided to carry the gas directly out of the house.

General Hints — Watch the chicks and keep them eating. When chicks are three or four weeks old, they outgrow the chick size feed hoppers. These should be replaced with larger hoppers and more of them. A four weeks old chick is more than twice as broad as a baby chick, therefore it needs more than twice as much room. Chicks need extra watering space at this age, too. Keep drinking fountain and feed hoppers clean. Disinfect with a solution of two level measuring spoons of Purina Chlorena Powder to three gallons of water.



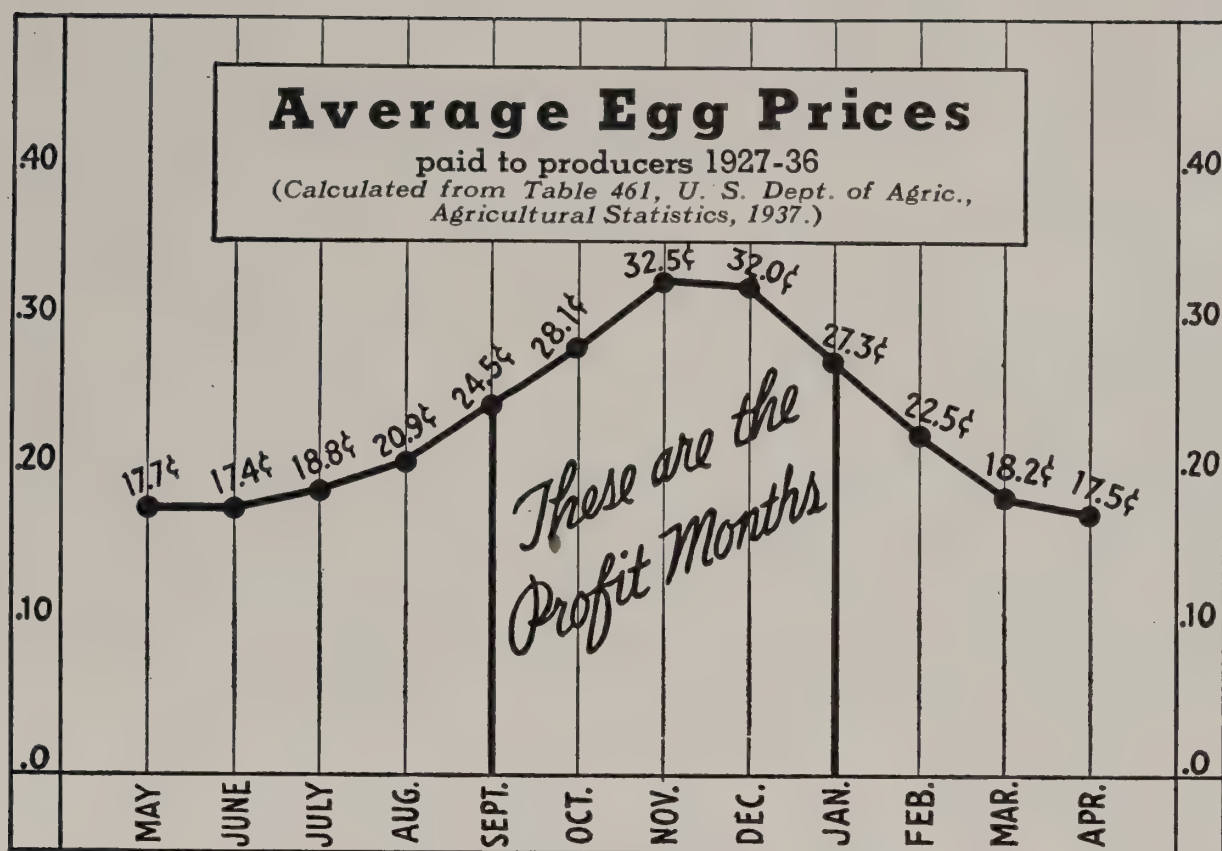
How to Handle Growing Pullets

MOTHER NATURE never intended for a pullet to lay eggs until she was nine or ten months old. Nature's plan is for chicks to be hatched in late spring or early summer, then after a long leisurely growing period she would be ready to lay the next spring. Her food would consist of weed seeds, bugs, green stuff and a little grain that she picked up here and there.

Under this plan, a pullet could lay at the most 60 to 80 eggs a year. These eggs would be laid in the spring of the year when eggs are plentiful and prices are low. With today's conditions, however, a poultryman can't afford to let nature take its course. Instead of taking 9 or 10 months to get ready for laying, he must have pullets ready in 5 to 5½ months. Instead of getting the first eggs in January or February, he must have eggs in September and October, when egg prices are the highest of the year. Every egg in the fall is worth two eggs in the spring.

Even if a bird is started on a good starting ration, then allowed to "scratch for itself" during the growing period, or is fed nothing but grain and grasshoppers, it will take eight or nine months to do a five-month job. All this time the pullet is costing its owner money and returning no profit. It pays to feed a growing ration and the kind you need depends on the method you are going to follow in raising your birds.

There are two plans you can follow in carrying your chicks through this growing period — the range plan and the confinement plan. Most



Egg prices are always highest during October, November and December. That's why it's important to grow and develop your birds properly so they'll be ready for heavy laying during these months.

poultrymen follow the range plan, but both are practical and good pullets can be raised under either plan. From the following description you can choose the one best suited to your needs.

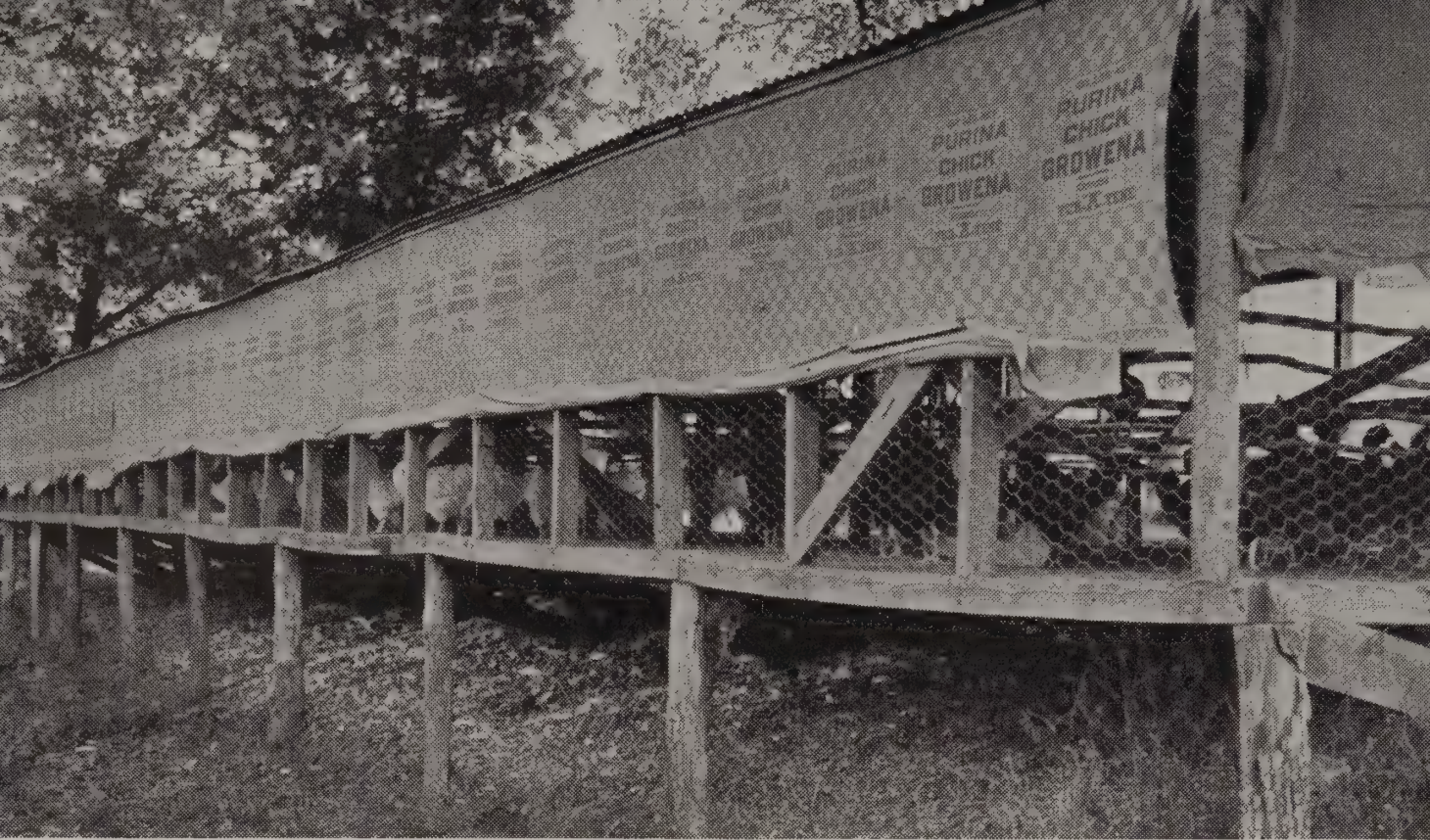
The Range Plan

The range plan is probably the easiest and simplest way to raise pullets, provided that certain precautions are taken.

One mistake that some poultrymen make is to run their pullets on the range all day and then crowd them into a small house at night. If you don't have range shelters or enough room in your brooder house, set up some sawhorses and strips of wood and let your birds roost on the outside. An occasional thunderstorm won't hurt them half as much as crowding them into the brooder house.

Providing plenty of space under range shelters is of course the ideal way to raise pullets under this plan. Several different types are used. Plans for a practical range shelter may be had by writing to the Poultry Department, Purina Mills, St. Louis, Mo.

If the permanent type of shelter is used considerable care must be taken to keep it sanitary. Spray the range shelters with a Purina Creso-fec solution to prevent mites and lice. Dust the birds with Purina Lice Powder if lice appear. If you see any signs of tapeworms or roundworms, give the pullets Purina Kamala Kernels or Purina Testules, whichever the case may be. Worms are most likely to appear when the birds are 12 to 20 weeks old. However, worm your pullets only when you are sure they need worming.



Pullet house with wire floor where excellent pullets are being raised entirely in confinement.

The Confinement Plan

If you do not have enough room to follow the range plan, provide a good clean house and raise your pullets on the confinement plan. The pullets shown in the picture above are being raised by this method. Note that there is plenty of room — at least two square feet of space for every pullet. Plenty of roosts are also provided, and feed sacks along the walls protect the birds from the wind and rain. You can't see the wire floor, but note that the droppings have fallen through to the ground. A one-inch 16-gauge wire will do for the floor. It should be cleaned twice a week, and lime should be sprinkled over the droppings to kill flies and help keep down disease.

Many poultrymen who follow the confinement plan like to use sun porches for their pullets to run on. Use one-inch 16-gauge wire for the floor of the porch. Strands of 9-gauge wire can be stretched under the wire floor to serve as braces. As you can see the pictures at the bottom of the page, the porches are high enough off the ground to make it easy to clean out the droppings. Sprinkle lime on the droppings to kill the flies and help keep down disease.

Colony house with wire porches.

Long pullet house with porches.



Getting The Birds to Eat Plenty of Feed

During the hot summer months it is often hard to get the pullets to eat enough feed. They want to loaf around in the shade during the heat of the day, so they don't take time to eat enough feed. Here's where Purina Growena Checkers come in. Since these checkers are small pellets of compressed mash, the birds can fill up on them in a short time. By scattering some of these over the regular Growena mash late in the evening, they can go to roost with a full crop. Feed Growena Checkers both morning and evening — all that the birds will clean up in about an hour.

Another way to get them to eat more feed is to place the hoppers and water fountains in the shade where they can get to them easily during the heat of the day. Don't let the hoppers stay in one place very long, however, as the ground is likely to become infested with parasites.

There is no set time to transfer your pullets to the laying house. Early hatched pullets that come into production in July or the first of August should be put in the laying house as soon as they come into production. If your pullets were started a little late, however, or if the weather gets bad early in the fall, you can move them inside even before they begin laying.

Feeding After Pullets Come Into Laying

Pullets often start out laying in good shape, then drop off in production after about 60 days. The reason is that they're not getting enough feed. After a pullet begins laying, she has three big jobs to do:

1. Continue growth and body development.
2. Keep up regular body maintenance.
3. Produce 15 to 18 eggs a month.

Unless feed consumption is increased to meet this heavy demand on the pullet's body, she has to let up somewhere—the natural place is on egg production. The chart below shows why increased feed consumption is needed to meet the demand of heavy laying—also what happens when feed consumption is not increased.

The feeding plan outlined on pages 24-25 will meet this situation and give a pullet all the feed she needs to produce the number of eggs that breeding put into her.



SAME AGE . . . SAME BREEDING .

THERE'S a mighty big difference in growth between the two pens of pullets you see below. Both photos were taken when the birds were 5 months old. The Purina-fed pullets weighed an average of $1\frac{1}{4}$ pounds more per bird, they were mature and well-developed, ready to begin laying. The grain-fed pullets were under-sized and immature, not ready to lay for $2\frac{1}{2}$ months. Even though they were switched to a balanced ration of Purina Lay Chow and grain when they were five months, they didn't begin laying immediately because they had to use laying feed and to grow develop their bodies.



Grown the Cheap Feed Way!

The two birds you see on the left are typical of the pullets in the pen below. They were started on Purina Startena, then at six weeks switched to straight grain, on alfalfa range. Even though they were put on Purina Lay Chow and grain at 5 months, they didn't begin laying until they were about $7\frac{1}{2}$ months old. *By the time they were eight months old they had laid only \$6.50 worth of eggs.*



... FEED MADE THE DIFFERENCE!

\$68.25 extra income in 3 months from the Purina-fed pullets—when you can get results like this from feeding a balanced growing feed, you can't afford to take chances with grain alone. Even though it cost a few cents more to raise the Purina pullets—just the extra eggs paid the difference in feed cost many times over.

Even a mash might have given the same results. For before a mash can promote maximum growth, it must be fortified with added proteins from meat and milk, properly synchronized . . . must contain added minerals . . . and must have an adjusted mineral balance.

Grown the Purina Way!

The pullets you see on the right are typical of the fine pen of birds shown below. They too were started on Purina Startena but during the growing period were fed Purina Growing Chow along with grain. They began laying at about 5 months, when they were switched to Purina Lay Chow. By the time they were 8 months old they had laid \$74.75 worth of eggs, or \$68.25 worth of eggs more than the birds fed on straight grain!





Three testing devices, which, for the first time, reduce the testing of vitamin A, carotene and lacto-flavin from many hours of tedious work to a few minutes of exact analysis.

“PURI-FLAVE”

New Growth Ingredient Now in Purina Chows

EVER wonder what it is that makes a chick grow? And why some chicks grow faster than others — even when they’re from the same parent stock?

Scientists in poultry nutrition have known for several years that a strange substance called *yellow respiratory enzyme* is responsible for the respiration of cells in birds and animals. They have known that without this substance chicks cannot grow.

Yet it is only recently that scientists discovered an important element in this yellow enzyme that causes chicks to grow. This growth element is now known as vitamin G (flavin).

Importance of Vitamin G

"In my own mind I feel that the discovery of the value of vitamin G (flavin) is as important to the poultry raiser as the discovery of vitamin D (cod liver oil)."

Dr. H. A. Smith, Research Director, Purina Mills

After the importance of vitamin G (flavin) was established, next came the job of adding it to livestock and poultry rations. Dried buttermilk . . . dried skim milk . . . dried whey . . . dehydrated alfalfa meal — these were the best known sources of vitamin G (flavin). But they sometimes failed to contain enough. Nor were they always dependable sources. It was up to Purina Mills to uncover a new rich dependable source.

Discovery of Puri-Flave

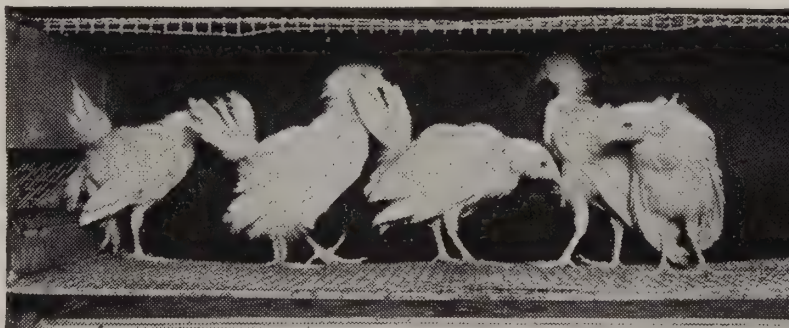
Purina Mills found this new source of vitamin G (flavin) in Puri-Flave — an amazing vitamin concentrate that contains $2\frac{1}{2}$ times as much of this vitamin as any of the above sources! Moreover the amount desired in a ration can be accurately controlled. At last it was possible to make sure your chicks receive enough of this important growth vitamin!

Puri-Flave has even been added to Purina Lay Chow and Layena—so the embryo in the hatching egg will get enough vitamin G (flavin) to develop into a strong, vigorous chick. Then after the chick is hatched, Purina Chick Startena will provide the large supply it needs for fast growth. Surprisingly a chick 1 week old requires 350 units of vitamin G (flavin) per 100 grams of feed, whereas a hen in full production needs only 135 units!

Hence you can see how important it is to get your chicks off to a head start on Purina Chick Startena. Now, more than ever before, *You can See The Difference Purina Makes!*

Flavin Deficient Ration

Here is where you can see the effect of vitamin G (flavin). The chicks at the right were fed a ration very deficient in this essential growth vitamin.



Ration Fortified With Flavin

These chicks received Purina Chick Startena — fortified with an ample supply of vitamin G (flavin). Every bag of Startena now contains all the flavin your chicks need!



PURINA FEEDING PLAN FROM CHICK TO LAYER!



Baby Chicks

It only takes two pounds of Startena to grow a big sturdy chick ready to switch to Purina Growena. This will be at about 5 to 6 weeks. Get your Startena and have it on hand before the chicks arrive. You'll need 200 pounds of Startena for each 100 chicks that you buy. Of course you want to have your brooder house ready, and brooder stove going.

When the chicks come give them a limited amount of lukewarm water shortly after they arrive. Then give them their first feed of Startena. Startena may be left before the chicks at all times from the first day on. Or, like many poultrymen, you may prefer the "stop and go" system of feeding—leaving feed before the chicks for two hours and then removing for one hour. Either system gives good results. Startena is a complete feed—nothing else is needed except water to drink.



Growing Pullets

Even though we recommend the complete all-in-one feed, Purina Growena, and feel that it has many advantages over the grain and mash plan of feeding, we realize that there are sections of the country where grain is abundant and many poultrymen feel it is to their advantage to use home-grown grain. For this reason, we have developed an outstanding mash feed—Purina Growing Chow, to be fed with grain. Both Growena and Growing Chow give excellent results if properly fed. Here are the two plans in detail:

Complete Feed Plan

As soon as your chicks have eaten 2 pounds of Startena switch them to Purina Growena, the complete growing feed. Keep the hoppers filled with Purina Growena mash. Feed Purina Growena Checkers, which are made by pressing the mash into 3/16 inch pellets, morning and evening on top of the mash. Feed all the Growena Checkers that the birds will clean up in an hour, both morning and evening.

Purina Growena contains cod-liver oil, minerals, buttermilk, and Pur-a-tene and may be fed to confinement-reared stock as well as range-reared stock. No other feed is needed. Sixteen pounds of Growena will feed a growing chicken from the 6th to the 20th week, when they are ready to lay.



Laying Hens

Complete Feed Plan: When your pullets are 5 months old change them to Purina Layena, the complete laying feed. Keep Layena mash before the birds at all times. Feed Purina Layena Checkers (mash in pellet form) at night, 5 to 7 quarts per 100 birds, scattered over the mash feed. With birds in heavy production, feed Layena Checkers several times daily, also stir mash several times daily. Layena is a complete feed, no scratch grain, oyster shell or green feed is needed.

Mash and Grain Plan: Feed Purina Lay Chow to supplement your grain. Keep Lay Chow before birds at all times. Feed scratch grain in the morning and evening, 10 pounds of grain total each day per 100 hens. Supply Purina Oyster Shell at all times in open hoppers. Encourage hens to eat more feed by feeding Layena Checkers at noon.

Mash and Grain Plan

Gradually change to Purina Growing Chow when chicks have eaten 2 pounds of Startena. Put 7 pounds of Purina Growing Chow in the hoppers daily for each 100 chicks. Do this for 100 days, when the birds will be around 5 months old.

Feed all the scratch feed the birds will eat—both morning and evening. Be sure that the morning scratch grain is fed before Growing Chow is placed in the hoppers. As the birds grow older and their appetites become greater, do not allow more than seven quarts of Growing Chow daily per 100 birds. If you prefer, you may keep Growing Chow before birds at all times, feeding scratch grain in the morning and evening, all they will clean up in 15 to 20 minutes.



Care of Laying Hens

HENS MUST be comfortably housed and well cared for if they are going to make money for you. A good laying house provides dry shelter for birds, without drafts.

Expensive equipment is not necessary. Often it is possible to remodel one of the buildings you already have and make a satisfactory laying house out of it. Most farms have a hay mow, a machine shed, or an extra unused horse stable that can be remodeled to provide excellent quarters for hens. Allow 4 square feet of floor space per bird. For illustration, a house 30 x 20 makes 600 square feet and will care for 150 birds comfortably.

If you are planning to build a new house, write to the Poultry Department, Purina Mills, St. Louis, Mo., for complete poultry house plans. There are two

general types of laying houses, the shed roof type and the gable roof. The gable roof house may be either one story or two story. Complete directions for building any one of these three types are included in the Purina Laying House Plans.

Watch the Ventilation

If the litter gets damp quickly in your hen houses, the moisture is probably coming from the birds themselves.

One hundred hens pass, on the average, 36 pounds of droppings every 24 hours. These droppings contain about 80 per cent moisture. Thus there is about 28 pounds of water, or 14 quarts, in the droppings, half of which is on the dropping boards and half on the floor. One hundred hens give off from 6 to 11 quarts of water each day as vapor in their breath. *It is this moisture which eventually reaches the litter and soaks it.*

Warm air can hold more moisture than cold air. Warm air rises, cold air falls. On these two principles rests the problem of keeping a house dry. The vapor of the bird's breath is given off with warm air coming from the bird's body, which is 106 degrees F. This air rises toward the roof, moving ever upward until it cools to room temperature. As it does so, the moisture is dropped out.

Ventilation consists of taking the air

(Below) One-story, gable roof laying house, commonly known as the Missouri straw loft house.



out high, for the warm breath is rising, and keeping it warm and moving until it gets out by insulation of the ceiling and reducing the distance it has to travel before it gets out.

If the air has to travel too far to the outlet, it will cool and drop the water. If the outlet is not at the highest point toward which all the air will flow, the warm moist air will be prevented from escaping. Warm air cannot move downward in a house to an outlet unless it cools, which in turn means dropping moisture.

High Ceilings Cause Wet Litter

Invariably a laying house with a high roof or ceiling is a cold, damp house. If your laying house has a high roof, it will be well worth your while to put in a ceiling or layer of insulating material about 6½ feet above the floor.

Hens will stand considerable cold if they are dry, so don't try to conserve the animal heat by shutting everything tight. In summarizing, for cold climates insulate all houses—take air out of a high opening which is to be always kept open. Most chicken houses should depend on front ventilation through the openings over the front windows.

There are companies that specialize in ventilation equipment and in specially designed and proven poultry houses. These companies have definitely aided the industry in its housing problems and



This dairy barn was converted into a practical four-story laying house.

have thousands of successful installations in operation.

Insulation

Insulation will work to advantage both in the North and the South. It will keep the houses warmer in the winter in the North and cooler in the summer in the South. Wallboard and insulation board are excellent for insulation purposes.

Provide Plenty of Nests

A hen usually prefers to lay eggs in a darkened nest or corner. To have the nest darkened, also reduces the amount of fighting and picking at the nests. One nest should be provided for every 6 to 8 birds. Keep the nests low to the ground so the birds do not have to jump too far or fly too high. Have the nests so that the eggs are easy to gather.

Provide deep, clean nesting material so that you will have clean eggs.

The shed roof house, shown below, is probably the most popular type laying house built. It is economical to build, easy to ventilate and gives little trouble from wet litter.





Two-story gable house, in use on many commercial poultry farms. Plans for building this house, as well as the shed type house, may be had by writing to the Poultry Dept., Purina Mills, St. Louis, Mo.

Fresh Water Is Necessary

Birds should be provided with ample drinking space, so all can get a drink when they need it. In the summer-time the water should be cool and fresh and in the winter-time it should be fresh and not frozen. In Northern sections this will involve the use of some type of heating element to keep the water at a reasonable drinking temperature.

It is usually most practical to have some sort of rack on which to set the drinking fountains. This will provide a place for the birds to stand while they drink and also will allow a place to catch the drops of water from the wattles of the bird and from the beak. Remember, a bird has to raise her head so the water will run down to her crop, by gravity.

Metal nests are easy to clean, practically indestructible, and easy to install.



Use Good Litter

Several types of litter give good results. A straw and shaving mixture makes a very good litter. Peat moss is very good. Peat moss and shavings half and half make a good mixture.

We would like to pass along a thought on the care of litter. Many poultrymen, especially commercial poultrymen, build a "mulch" of the litter in the following manner: a good deep litter is put in in the early fall, and every two or three weeks the damp, and badly soiled portions are removed, leaving most of the litter still in the pens. This is then raked over evenly through the building and fresh litter is added on top. This process is carried on all winter, and by spring the litter is from 10 to 15 inches deep. This may not be the cleanest method for caring for litter but it does the trick as far as moisture is concerned.

Laying House Sanitation

Here are some sanitation suggestions which will help to keep your hens healthy and laying: (1) Clean the house thoroughly with a Purina Cre-so-fec solution in the fall before pullets are housed. (2) Keep birds away from droppings by using wire mesh over the dropping boards. (3) Remove droppings and litter as often as necessary to keep house clean and free from objectionable odors. (4) Examine birds frequently for lice—

whenever lice are found, paint roosts with Purina Roost Paint as recommended on the can. (5) Whenever respiratory diseases are present, close the house and dust the birds with Purina Chlorena Powder. (6) If disease is present, use Purina Chlorena Powder in the drinking water to help prevent the spread of disease.

Plenty of Feeding Space

There are many types of feeders on the market, most of which are entirely satisfactory. The round Purina hopper, because of its shape, is very efficient in feeding. One hopper will feed 20 to 25 birds easily. It swings clear of the ground, and it is adjustable so that no feed is wasted. The metal Purina hopper can be purchased from your Purina dealer. Be sure the hopper is not too high from the ground, as that restricts mash consumption.

Electric Lights Increase Production

Hens in heavy production need a 13- to 14-hour day, in order to eat enough feed to maintain egg production. At the Purina Experimental Farm we have found that morning lights are more satisfactory than both morning and evening lights or all-night lights.

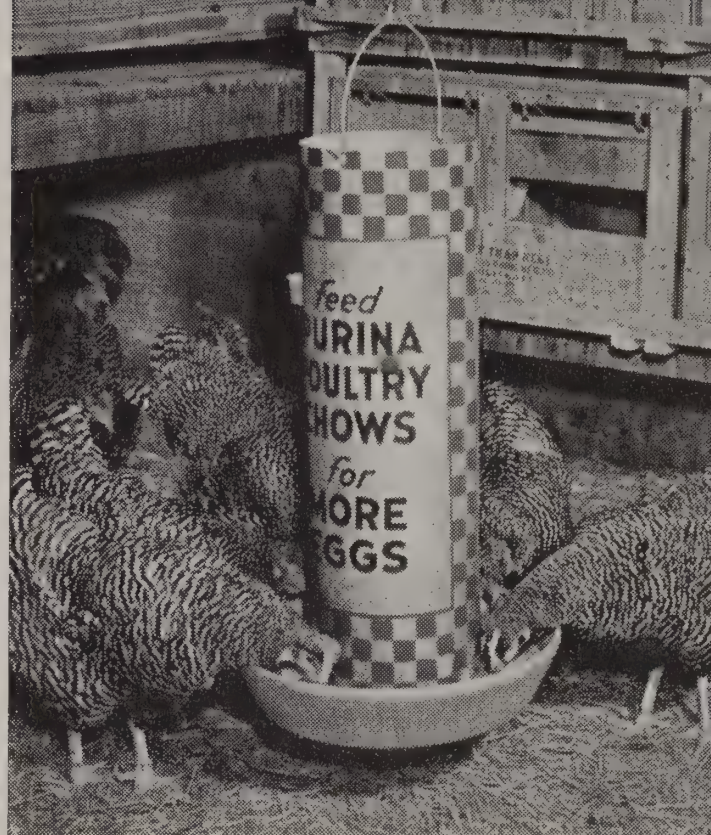
Take Good Care of Your Eggs

It is best to gather eggs several times a day, winter and summer. In the winter-time, they must be gathered often to prevent freezing. Eggs will crack at about 28 degrees F., which is their freezing point.

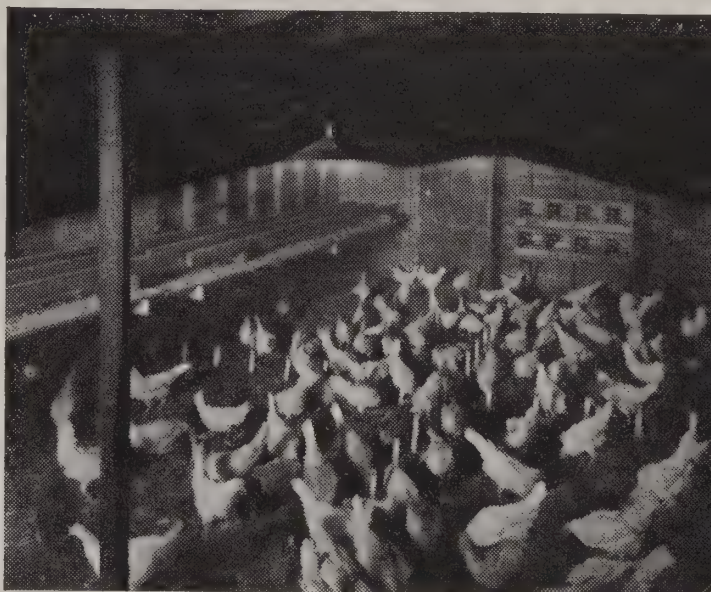
Eggs should be gathered in wire baskets, and not solid pails. This is because the animal heat takes so long to leave eggs gathered in a pail. The eggs should then be taken to a cool basement, or egg storage room.

Eggs sold for table use should be infertile. Hens do not need roosters in the flock to cause them to lay. Hence, when the male birds are left in the pens, and the warm days of summer come along, these eggs will incubate because they are fertile. Slow incubation takes place at 68 degrees and above.

Hatching eggs should be kept at a temperature as near 55 degrees as possible. Don't keep them in a room that is stuffy, dusty or musty.

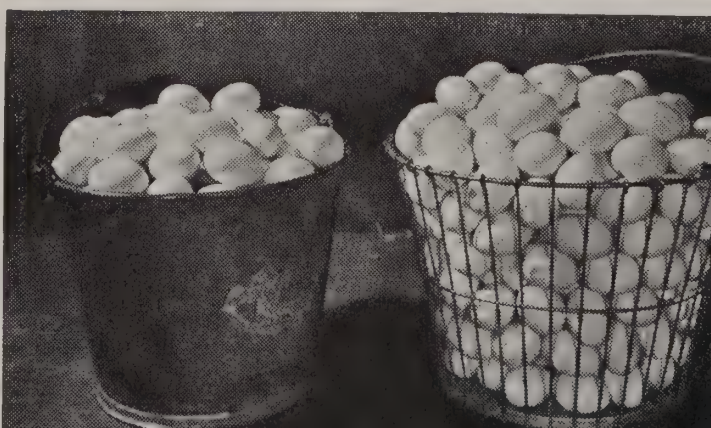


Metal sleeve-type mash hopper, for sale by all Purina dealers. Easy to fill, prevents waste, lasts indefinitely.



Electric lights give a hen a longer day to eat and lay. Note lights are on the roost as well as on the floor.

(Below) Wire baskets cool eggs much more quickly than ordinary pails and should be used for both table eggs and hatching eggs.





LAYENA CHECKERS

These handy Checkers are the same as Layena mash except the mash is pressed into grain-like pellets. When fed along with Layena mash, these Checkers give you control over feeding operations. They are easy to feed, they replace wet mashes and they put the bird on the roost at night with a cropful of feed.

Pointers on Feeding Layers

Change Feed Slowly: When you change from one feeding plan to another, we recommend that you do so gradually by taking two or three weeks for the change.

Changing from Growena to Layena, (complete plan), or from Growing Chow to Lay Chow (mash-scratch plan), can be done by mixing the growing feed and the laying feed together half and half for two days, and then swing over on the straight laying feed.

Feed Intake: About three-fourths of all the feed a bird consumes goes to maintain the bird's body. The balance left over goes to make the egg—if *this feed is in the right proportion to make an egg.*

A high feed intake is essential to get the best egg production. A bird will normally eat about six to seven pounds of feed a month—four to five pounds of which go to maintain her body. Thus, if we can get her to eat another half-pound of feed by the use of electric light, wet mashes, or checkers, you can easily see that we have increased the amount of feed left over for egg production.

Cold Snaps—Hot Spells: Egg production often goes down when we have

a severe cold snap in winter or a few days of extreme heat in summer. The reason is not temperature. Actually, egg production drops because birds do not eat their normal amount of feed under these conditions. Purina Layena Checkers fed two or three times a day in small amounts will hold up feed intake and maintain your egg production through these hot and cold snaps.

Amount of Feed Needed: Now that breeding has made it possible for a hen to lay 175 to 200 or more eggs a year, you can see that she must get more feed and better feed than the old 75-egg-a-year hen. Roughly, feed consumption should increase with egg production in about the following ratio:

Eggs per Hen per Year	Lbs. Feed per Month
120-130.....	6-6½
150-170.....	7-7½
200-250.....	8-8½
250-325.....	9-9½

The increased feed consumption necessary for high egg production can be accomplished by feeding Layena Checkers several times daily, by using electric lights, by adding fresh feed often and stirring the feed in the hoppers frequently.

Keeping Hens in Cages

THERE are many poultry plants that start, grow and lay their chicks in an egg factory today,—especially around the cities and bigger towns. As was expected, the construction of the cages, such as cleaning apparatus, feed pans and water troughs, etc., have undergone a great change in a short while, but they operate quite efficiently today.

Hen cages are here to stay, and are to be a bigger factor as years go by in the production of fresh, high quality eggs.

Methods of Feeding: We definitely recommend the complete feeding program for hen cage work. This means Purina Startena to start and grow the birds up to six weeks of age, and then to change to Purina Growena, Meal and Checkers, which are fed until the birds are twenty weeks of age, when they are transferred to the laying compartment and fed Purina Layena, Meal and Checkers. These feeds contain everything that the birds need;—cod liver oil, grit, oyster shell, etc., need not be added.

Many poultrymen will prefer to feed Layena Checkers alone as the complete feed for their laying birds. Layena Checkers may be kept before the birds at all times. Feeding fresh Checkers about twice a day will tend to keep the birds on feed.

Watch Out for Diseases: Respiratory diseases are by far the greatest bugaboo of this type of plant management. Once colds, roup or bronchitis get into the plant you will find them very difficult to check. A strict sanitation program will help the hen-cage operator to keep down disease. The building which houses the batteries should be well insulated and should provide fresh air without drafts. The temperature and humidity should be carefully controlled.

Avoid Overcrowding: Don't crowd too many birds into one building. Crowded together, they are much more apt to come down with respiratory diseases.



PURINA LAYING CHOWS

and the Purposes They Serve

EVERY POULTRY RAISER who keeps laying hens has one of three things in mind when he buys feed for them. He wants:

- (1) Increased egg production
- (2) Eggs of better market quality
- (3) Stepped-up hatchability

Some poultry raisers are interested in only one of these things. Others have two of them in mind. Some want all three. Purina Laying Chows are built to fit any one or all of these needs. The different feeds are listed below, in order that you may pick out the Purina Chow that is best suited to your needs.

1. More Eggs, Better Eggs, Increased Hatchability

Layena, the complete all-in-one feed furnishes everything a hen needs for laying lots of eggs, eggs of controlled interior quality and eggs that have been stepped-up for extra hatchability. Layena eggs, which are eggs produced under the Layena feeding plan, are known from coast to coast as market eggs of the finest quality. Layena is the biggest selling laying feed in the country today.



2. More Eggs, Increased Hatchability

Layena, the complete feed, is now stepped-up in vitamin G (flavin) content by the addition of the new ingredient, PURI-FLAVE. Flavin is the substance which is vitally important for high hatchability and strong chicks at hatching time.

Lay Chow, the mash feed to be fed with your grain, is one of the greatest egg makers that poultry raisers have ever known. Lay Chow is also stepped-up for extra hatchability by the addition of Puri-Flave. Both Lay Chow and Layena contain buttermilk, cod liver oil, Pur-a-tene and other ingredients which make them especially well adapted for feeding to large flocks which are confined inside the laying house at all times.



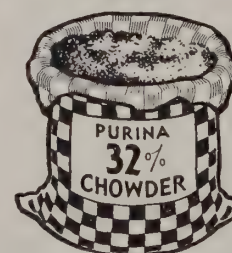
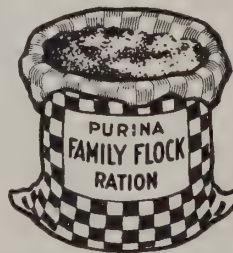
3. More Eggs

Layena, the balanced feed which enables a hen to lay all the eggs that breeding intended for her to lay.

Lay Chow furnishes the things grain lacks to make lots of eggs.

Family Flock Ration is the all-purpose laying feed that can be used as a complete feed or fed with grain. Family Flock Ration is an economical feed that furnishes everything a hen needs to lay lots of eggs and stay in good health. Made especially for farm flocks and small flocks in town.

32% Chowder is the laying feed concentrate to be used where there is an abundance of home-grown grain. When mixed in the right proportions with ground grain, it makes an excellent laying ration.





Make Money with Broilers!

THE BROILER industry offers a real opportunity to make money either as a sideline or a full-time job, if a man will follow a sound, workable program.

Most of the large broiler producers market their birds alive, but there are some who kill and dress the birds at their farm, and deliver them direct to the consumer. Usually they develop a fancy trade such as hotels, restaurants, and quality grocery stores.

Future Depends on Quality Product

The future of the broiler industry depends to a great extent on the ability of broiler producers to produce a quality product. As the quality of broiler meat is improved, the consumption will increase accordingly. When the consuming public realizes that they can buy fine quality broilers any month of the year, there will be a greater demand for broiler meat and a better market for those who are producing broilers.

4-Point Broiler Plan

Successful broiler producers will tell you that the way to make money with broilers is to produce a quality product at the least possible cost in the shortest time. There are four things necessary in order to do this job. You will find that

the successful broiler producer watches each one of them carefully. They are:

1. Start with good chicks.
2. Practice careful management.
3. Choose the right feed.
4. Locate a good market.

The baby chick is the factory which converts feed and water into poultry meat. Any successful broiler man will tell you that a high quality, thrifty chick is essential to success in the broiler business. This type of chick will live and grow. It will make efficient use of feed, will gain rapidly, stay on feed, be more resistant to disease and will put on more meat in a shorter length of time.

Improved Feeding Methods

During the past few years outstanding advances have been made in the development of broiler rations. Mortality has been greatly decreased, the rate of growth has been stepped up, and the quality of meat improved as a result of extensive research work on broiler rations. The special broiler feed, Purina Broiler Chow, which was developed in the Purina Research Laboratories, is now the most widely used broiler feed in the biggest broiler producing areas in the country.

Feeding the Chick Embryo

MODERN RESEARCH has found that feeding has a lot to do with whether or not an egg will hatch, and what kind of a chick it will produce. This fact is basic; you can't add anything to a hatching egg after it is laid. The hen makes the egg from the feed that she eats, and eggs vary in nutritive properties, such as vitamins and minerals, depending on the amounts that are present in the feed the hen eats.

A baby chick inside an egg is feeding on the yolk and white material just as much as a baby chick eats Purina Startena out of a hopper after it hatches. For this reason, the new vitamin G (flavin) concentrate, Puri-Flave, has been added to Purina Layena and Lay Chow. Now by following the Purina Plan, you can have more assurance that the embryos in your hatching eggs will develop into strong, vigorous chicks.

The livability and vitality of the chick is also related to the nutritive properties furnished the chick while it is in its shell prison. A small reserve of food property is included into the chick's body just at hatching time (absorbed yolk) which also serves to start the chick off on the right foot.

Nutrition of course is not the only thing that causes poor hatchability and poor livability in chicks. However, we are sure that often the nutritive factor is the weak link in the strong chain of factors

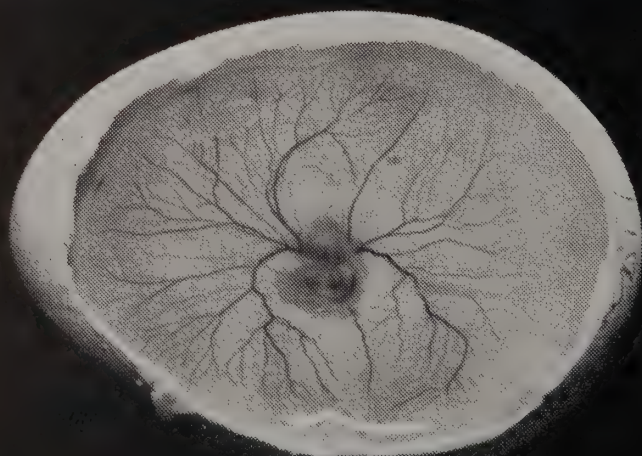
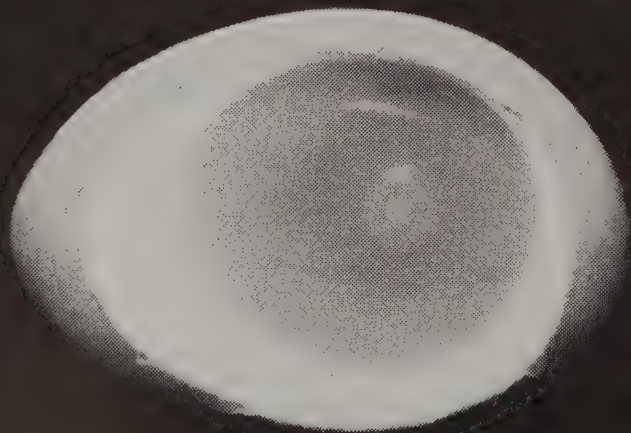
that lead up to high hatchability and vigorous chicks. Many times breeders and hatcherymen have changed their breeding flocks over to Purina Poultry Chows and in several weeks the eggs that are laid hatch better and the chicks are stronger. More than that — there are hundreds of hatcherymen in the United States who are actually paying 2c or more a dozen premium for Purina-fed eggs over eggs fed other rations — because these eggs hatch better and the chicks are stronger. What better proof can there be that Purina Chows have everything needed for higher hatchability and more livability in chicks?

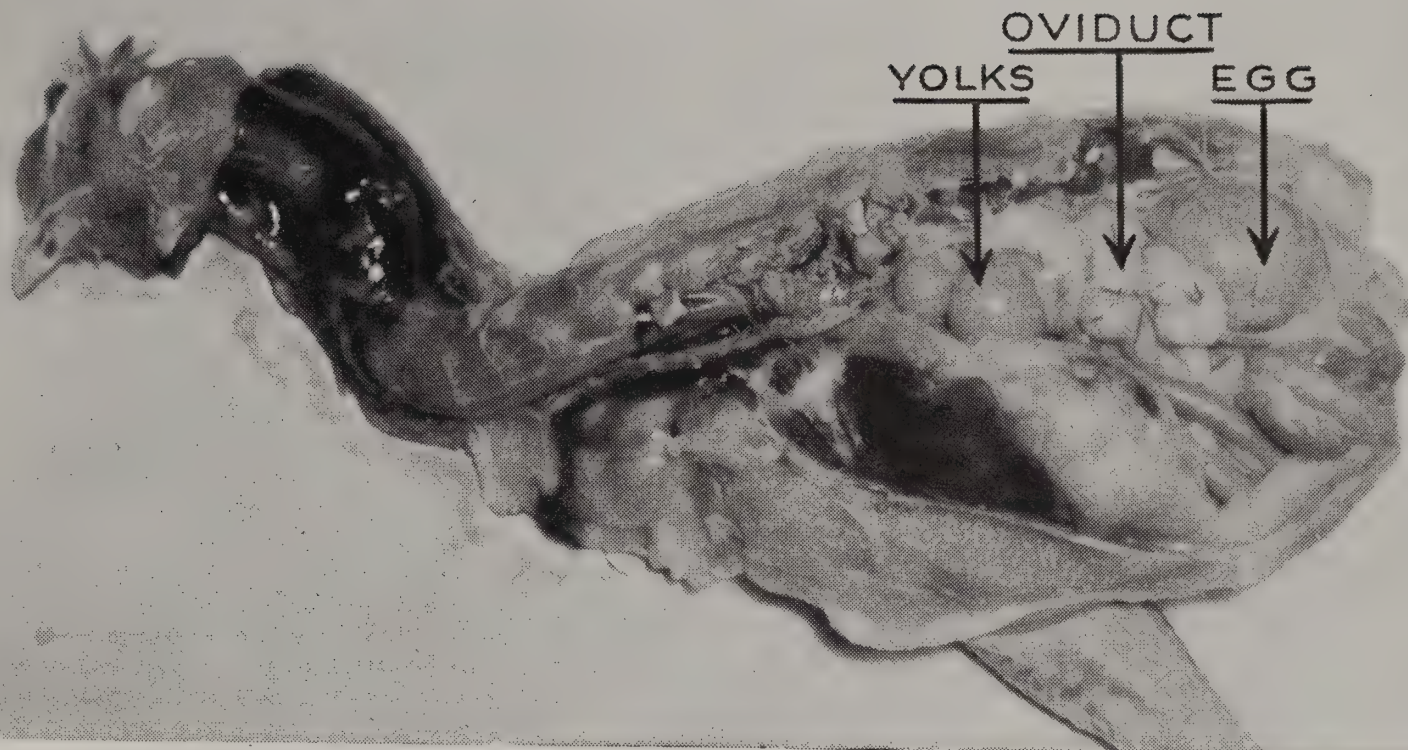
Care of Hatching Eggs

A hen can have plenty of vigor—and she may have eaten the finest ration in the world, but if her hatching eggs are kept too long and under improper conditions such as too warm or too cold, or the eggs are held lying on their sides instead of packed endwise in cases after the first animal heat is out of them, they may not hatch properly. If the eggs are badly shaken up during transportation to the incubator room or hatchery, the best of hatching eggs lose their hatching strength. Here again the control of this problem is in the hands of the operator of the breeding flock, and the hatchery receiving the eggs. We have a free flock-owner service which describes the proper care of hatching eggs for those who desire it. It may be had by

FIRST DAY: *By the end of the first day the blastoderm (germ cell) which is seen in the center of the yolk, has enlarged slightly.*

SIXTH DAY: *The head is beginning to be visible. The heart beat has increased to 160 beats per minute.*





Here's where embryo feeding begins. The feed the hen eats goes directly into building the yolks, whites and shells of the egg. Unless the proper vitamins, minerals and other food elements are in the feed, the hen can't put them into the egg.

writing to the Purina Mills, Poultry Department, St. Louis, Mo.

The breeders can be healthy, they can have had the best feed, the eggs could be well cared for, and still the incubator could ruin the benefit of all these three. The more modern incubators today are electrically controlled as to temperature, humidity, and ventilation. If you are having trouble with hatches or trouble on hatchability, and you think the trouble is in the machine, by all means get in the service man from the incubator concern whose machine you have. They should know more about their own machine than any one else.

12th DAY: *The outline of the body is now clearly visible . . . you can see the feet, wings, beak and eye.*

How to Locate Poor Hatchability

Embryo mortality usually occurs on the fourth, the eleventh, and the eighteenth days. Where plenty of embryos die on the fourth day, look to some factor wrong with the breeding hen or with nutrition. Where a lot of mortality occurs during the eleventh day of incubation, you should most definitely check up on the nutrition of the breeders. Where the mortality occurs mainly on the 18th or 19th days, this is primarily an incubation problem, which may be partly affected by nutritive properties and several other minor factors.

19th DAY: *Chick moves its head into air space and begins breathing . . . it will soon begin picking at the shell.*



POULTRY DISEASES

THE SAYING "An ounce of prevention is worth a pound of cure" certainly applies to the control of poultry diseases. The best insurance against disease losses is to follow a sanitation program which will prevent most outbreaks before they ever occur. But no matter how careful the poultryman may be disease will break out occasionally, and he should be prepared to recognize it in its early stages. It is for this reason that we are presenting this section in which some of the diseases that are most apt to cause the poultryman trouble are briefly discussed. As will be noted, the recognition of some diseases is a relatively simple matter, while others require a laboratory examination.

Above all, do not delay in obtaining a proper diagnosis for control measures are more effective if the disease condition is recognized in its early stages. While certain diseases such as fowl pox and laryngotracheitis may be controlled by vaccination, the individual treatment of affected birds other than those which are particularly valuable is difficult and impractical in many instances, because even if successful the cost as compared with the value of the bird is apt to be too great.

Sanitation is Important

In speaking of the care of birds, we must consider that much abused term, sanitation. Sanitation refers to providing and maintaining houses and yards safe for birds to live in and protecting the healthy fowls from diseased fowls from the same or in outside flocks. As indicated poultry houses should be so designed as to provide ample light and fresh air, and constructed of material which may be readily cleaned and disinfected. Wire netting should be installed to prevent access of the fowls to droppings under the roosts. Feed troughs or hoppers should be of a type to prohibit contamination of the food with droppings. The feeders should be of the removable type and so constructed as to be easily cleaned. Drinking devices should be of a size to adequately accommodate the population of a given pen and designed to supply fresh, clean water continuously. The elimination of moist areas around the watering devices is important and essential in the prevention of such intestinal parasitism as coccidiosis.

Since no practical and effective method of cleansing soil by chemical treatment has been found, the transmission of dis-

ease and parasitism by soil contamination can be retarded by the use of yard rotation, inasmuch as most disease germs will die in a few months provided the ground is cultivated and the germs exposed to the direct rays of the sun. In case the soil contamination is such as to render the yards unsafe, the birds may be reared in semi-confinement on concrete runs or on wire sun porches.

Keep Houses Clean

Cleanliness in the poultry quarters can best be maintained by a regular schedule of removing the litter and droppings. The litter should be such that its cost will not influence the frequency with which it is renewed. In cleaning preparatory to disinfection, remove all litter and if possible burn it if infection is present. Remove the roosts, nests and other loose fixtures, scrape and scrub these and when thoroughly clean, dip in a 3% Cre-so-fec solution and dry in the sunshine. The interior of the house should be thoroughly swept down and the walls and floors thoroughly soaked with Cre-so-fec solution after all visible dirt has been removed. Avoid introducing infection by placing stock which is purchased or birds which are returned from shows and laying contests in quarantine for a period of two or three weeks before adding them to the main flock. In buying stock it is wise to check up carefully for evidence of any disease trouble in the flock from which purchases are to be made.

Crates or equipment which has been used by those contacting flocks throughout a community should never be used until they have been thoroughly cleaned and disinfected.

Birds which die as a result of any disease should be viewed as a source of infection, and should be disposed of by burning.

1. BROODER PNEUMONIA (Aspergillosis)

Caused by a fungus infection which chicks breathe in from moldy litter and spoiled feed. The fungus grows in the lungs and air sacs, forming small grayish-green patches. Because of the tissues affected, one of the first symptoms noted is difficult breathing, accompanied by listlessness, fever, and diarrhea. This disease condition does not occur very frequently, and should not be confused with the pneumonia which is associated with unfavorable brooding conditions, or chick bronchitis, which occurs during the same age period, namely, one to three weeks.

Treatment consists in removing the moldy litter or feed, after which the quarters and utensils should be cleaned and thoroughly disinfected with Purina Cresofec. Because of the tissues affected, medicinal treatment of the infected chicks is of little value. Chicks which are showing gasping symptoms should immediately be removed from the remainder of the group. This will cut down on the spread of infection, and greatly increase their chances for recovery.

2. PULLORUM DISEASE

Pullorum Disease is a germ infection which may be transmitted from the hen to the chicks by means of infected eggs. A varying proportion of the eggs laid by a diseased hen carry the organism, and chicks hatched from such eggs show evidence of infection shortly after hatching, and many die. However, the disease is not always fatal, and chicks which survive may grow to maturity with the infection localized in the ovaries, thus continuing the cycle of infection.

The symptoms shown by infected chicks are not always the same. Those chicks which die shortly after hatching may show no symptoms whatever. Although affected chicks may show a whitish diarrhea, the absence of this symptom does not necessarily mean that pullorum infection may not be causing the trouble. Affected chicks may huddle under the brooder as if cold, and show little inclination to move about or eat. The death loss usually reaches its peak within five to ten days after hatching. If, as is frequently the case, chicks pick up the disease after hatching, the heavier losses may occur between the eighth and fourteenth day. The germ of the disease is found in nearly all of the internal organs of the affected chick, but more particu-

larly in the lungs, liver, and unabsorbed yolk sac. The infection in the lungs may cause the formation of small cheesy areas, which although different, may be confused with somewhat similar lesions of brooder pneumonia. The only way in which you can be certain that your chick losses are due to Pullorum Disease is to have a laboratory examination made to determine the presence of the germ.

There is no successful treatment for chicks affected with this disease. Control efforts should be directed toward removing carriers from flocks which are producing hatching eggs. This is accomplished by blood testing the breeding flock. Since there are several methods of blood testing, it is suggested that you consult with your local veterinarian or state officials concerning the particular methods which they recognize as official. Since the disease is readily spread in incubators at hatching time, your sanitation program, in addition to thorough disinfection of brooding equipment with Purina Cresofec, should also include fumigation of the incubation and hatching compartments with formaldehyde gas. For detailed instructions concerning the fumigation of incubator equipment consult the manufacturer.

3. ENTERITIS (Simple Diarrhea)

Aside from the bacterial and protozoan diseases and parasitic infestations which may cause an enteritis, there are also a number of rearing faults which may and frequently do result in symptoms of diarrhea. Extremes in brooding temperature such as chilling or overheating; holding chicks too long without food, spoiled feed, musty feed, immature grains, unsanitary conditions around the feed hoppers and water utensils—are all factors which may cause bowel trouble in otherwise healthy birds. Depending upon the length of time the birds have been subjected to these unfavorable conditions, the symptoms may range from moderately fluid droppings to a severe diarrhea and even death of large numbers of birds if the unfavorable conditions which are causing the difficulty are not corrected. It is indeed surprising how frequently the loss of chicks has been due to some fault in management. Treatment consists of eliminating the cause. A flock treatment of Purina Nik-Tonik is recommended in treating enteritis.

4. CHICK BRONCHITIS

This is a highly infectious disease, due to a filterable virus which is distinct from that causing Laryngo-tracheitis (infectious bronchitis) in older birds. It usually appears before the age of three weeks, spreads rapidly, and affects nearly all chicks in the brood. Fortunately, the death loss seldom exceeds 10 to 15 per cent.

Affected chicks gasp and there is considerable coughing, due to the accumulation of mucus in the lower end of the windpipe, and in the larger air tubes of the lungs. When this mucus plug shuts off breathing completely the chick dies from strangulation, and with symptoms of convulsions. To help throw off this accumulation of mucus, sprinkle Purina Chlorena Powder in the litter where chicks roost, just before they settle down for the night.

The control of this disease presents a serious problem, particularly in hatcheries or broiler plants where brooding is more or less continuous. Where continuous brooding is practiced, the addition of new chicks must be suspended until all brooders have been emptied of those which were exposed to the disease outbreak. The brooders and all equipment should be thoroughly cleaned and disinfected with Purina Cre-so-fec before being used again. The use of one-half level teaspoonful of Chlorena Powder in each gallon of drinking water will be helpful in keeping down the spread of infection. Chicks which recover from this disease will still be susceptible to Laryngo-tracheitis as older birds.

5. COCCIDIOSIS

This disease of the intestinal tract of birds is caused by a one-cell parasite of microscopic size known as a Coccidium. Six different kinds of Coccidia have been found in chickens, but only four of these appear to be harmful. The type which usually infects chicks between the age of three to eight weeks causes an inflammation of the ceca or blind gut. Poultrymen recognize this form by the appearance of blood in the droppings. In birds which die suddenly, the blind guts are of a dark red or purple color and filled with blood. When this type of a disease is not so severe, because of a lesser infection or the age and resistance of the birds, bloody droppings may not be noticed, but there is usually droopiness, a lack of appetite, and a rapid loss in weight.

Many individuals which survive a severe outbreak may remain stunted. There is still another type which affects the

middle third of the small intestine, causing bloody droppings and sudden losses, which usually occurs at an older age period. Although infection with this type of Coccidiosis usually occurs when the birds are on range, heavy losses have been observed after the birds have been placed in the laying quarters. In very acute attacks affected birds may die suddenly without symptoms of a bloody diarrhea. In such cases the mid portion of the small intestine will contain a bloody mucus which has a jelly-like consistency. The outside of the intestinal wall will show a mixture of white and red pinpoint spots. Birds which survive lose flesh very rapidly and are slow to recover.

Chronic Coccidiosis is observed most commonly in chickens between four and eight months old and as a rule, represents infection with one or a combination of two types of Coccidia, which produce a thickening of the first eight or ten inches or the mid portion of the intestinal wall. This damage to the intestine develops and progresses slowly, and may not be suspected until a few birds of the flock begin to show a loss of appetite, roughened plumage, paleness of the comb and wattles, gradual loss of flesh and general weakness. Birds which may have become infected at the ages of three or four months frequently do not show evidence of infection until reaching 40 to 50 per cent production, when they go off condition because they do not have the reserve vitality and are unable to properly digest nutritious foods. At times this weakness resulting in partial disuse of the legs has been confused with range paralysis. So far as is known, these two conditions are unrelated.

Since no form of treatment has as yet been uniformly successful as a cure for Coccidiosis, and has, at best, served only in lessening the severity of the disease, control by means of proper sanitation appears to be the most practical recommendation. Coccidiosis is transmitted by means of feed, water, and soil, which have become contaminated with the droppings of affected birds. Before the parasite in the droppings can be harmful to other birds, it must develop into an infective stage. This requires a period of approximately two days under proper conditions of temperature and moisture. Therefore it is of prime importance to rear birds so as to eliminate contact with the infective stage of the parasite, insofar as is practical. This may be done by rearing birds in confinement on wire floors, a method

which is being used with complete success on the Purina Experimental Farm.

If the birds are reared on board or concrete floors, the litter should be kept dry, and removed at least every third day during an acute break of the disease. After each removal of litter, the pens should be cleaned and disinfected with Cre-so-fec. Since moisture favors the development of *Coccidia* outside of the body, the drinking fountains should be placed on raised wire platforms. Feeders should be protected against contamination with droppings.

Because of the great demand from poultry raisers for a reliable enteritis powder and tonic, Purina has placed on the market a new product called Purina Nik-Tonik. This product can be used with either wet mashers or dry mashers, and has given very excellent results after an attack of Coccidiosis through its stimulating effect on the birds by increasing food consumption and its healing effect upon the intestines. It should be understood that Nik-Tonik is not recommended as a cure for Coccidiosis and those who use it for that purpose may be disappointed in an otherwise beneficial product. Some poultrymen use the milk flush treatment for this disease. Mix 40 lbs. of dried milk with 60 lbs. of growing mash and feed as a milk flush for 2 to 4 days. Follow this within 2 to 4 days with Purina Nik-Tonik, using 3 lbs. of Nik-Tonik to each 100 lbs. of total feed for 5 to 7 days. Then continue on your regular feeding program.

6. INFECTIOUS COLDS OR ROUP (Coryza)

This is a specific germ disease which is spread from one bird to another, and is not due primarily to climatic conditions or poor housing. However, unfavorable conditions, as well as intestinal parasites and poor nutrition, may lower the resistance of birds to the extent that they may be more easily infected and are less able to overcome the disease.

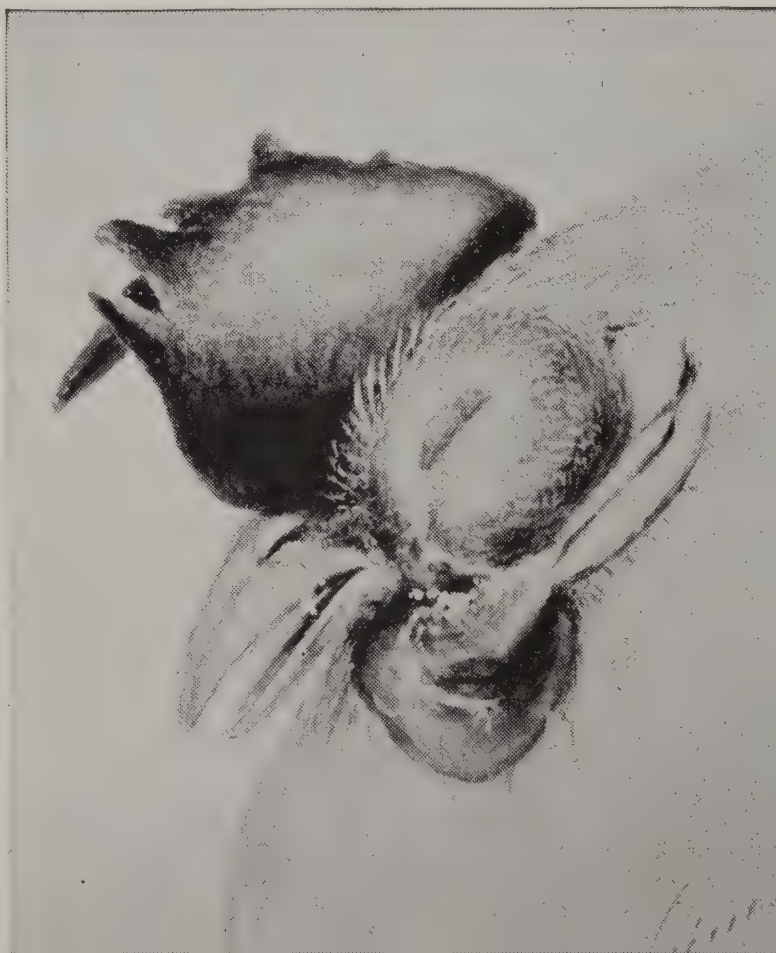
The disease may occur in a very severe, moderate, or mild form. In the severe type, which is particularly disastrous in birds six to twelve weeks old, the first symptom noted is a light mucus discharge from the nose, which dries, plugging the nostrils and causing distention of the sinuses at the side of the head. Frequently there is puffiness about the

eyes, and occasionally swelling of the wattles. Mucus and cheesy material may collect in the cleft in the roof of the mouth. Mucus may also accumulate in the windpipe, causing the bird to gasp and cough. When these symptoms are observed one should be careful not to confuse this disease with Laryngo-tracheitis. The affected birds soon show a loss of appetite, droopiness, and gradually waste away. In the milder types of the disease, the symptoms are less pronounced. If there is swelling of the face in addition to the discharge from the nose, it does not persist as long, nor are as many birds in a given group affected. In these milder cases the birds begin to show improvement after a few days, the appetite and general vigor return to normal.

The first step in controlling an outbreak is the removal of affected birds. If this is done during the early stage when only a few birds are affected, it will help in stopping the spread of the disease. The recovery of affected birds may be hastened by washing the nasal passages with lukewarm water solutions containing Purina Chlorena Powder in the propor-

(Below) Bird suffering from roup or common cold — note swollen eye.

(Photo courtesy of the U. S. D. A.)



tion of one level teaspoonful per gallon of water. A like proportion should be added to the drinking water to keep down the spread of infection. Excellent results have been reported from the use of Chlorena Powder as a dust spray over the heads of affected birds. It has a definite antiseptic value, as well as being a distinct aid in clearing the nasal passages.

The quarters in which infected birds have been housed should be thoroughly cleaned and disinfected with Purina Cre-so-fec. As soon as they have dried, these quarters may again be used without fear of infection to previously unexposed birds, provide all birds which were previously housed therein are removed. This matter of complete removal of affected birds is most important, inasmuch as failure to do so will render effective control virtually impossible. If affected birds are kept on the premises they should be completely isolated, and if possible cared for by a separate attendant. Since the bodily resistance of affected birds is dependent upon normal nutrition, much good may be accomplished through the use of Purina Nik-Tonik (3 pounds per 100 pounds of feed), stimulating the appetite and keeping it at a normal level.

7. LARYNGO-TRACHEITIS

This disease has become widespread in the United States and Canada. Although fowls of any age may become infected, the disease and heavier losses usually occur among laying pullets from six months to one year old. The symptoms are those of gasping for breath. As a rule, the affected bird assumes a sitting position, with the neck drawn in, and beak down. At each breath the head is thrown upward and forward, with the beak open. The intake of air is accompanied by a loud wheezing and rattling sound, due to the accumulation of mucus in the larynx and windpipe (the trachea). This mucus is thick, yellowish, and frequently tinged with blood. In severe cases the windpipe may become filled with clotted blood. Death occurs from strangulation when the affected bird is unable to cough up the mucus or mass of clotted blood material.

The cause of this disease is a virus which is found principally in this mucus exudate that forms in the larynx and the windpipe. Besides chickens, pheasants are the only other species susceptible to the disease. Attempts to infect turkeys, ducks and pigeons, and certain species of wild birds, have been unsuccessful.

Birds that recover from the disease are permanently immune, but some of these may carry the virus in their trachea (windpipe) for over a year, and may, therefore, be a source of danger in causing annual outbreaks. Therefore, all recovered birds should be kept isolated from all other fowls on the farm. Fortunately, the virus causing this disease does not survive long once outside the animal body, being quickly destroyed when exposed to direct sunlight or moderate temperatures. After the group of birds which has passed through an attack of the disease has been removed, the quarters and utensils should be cleaned and disinfected with Purina Cre-so-fec. Since this disease causes death through the accumulation of mucus, the treatment of birds already affected should be directed toward keeping the air passages free. Much good may be accomplished in this respect by dusting the birds lightly, but frequently, with Purina Chlorena Powder, using a special dust gun, which may be obtained from your Purina dealer.

PREVENTIVE VACCINATION

Several years ago it was discovered that the mucus membrane of the cloaca may be infected with the virus of this disease, and that infection of these tissues does not cause any general disturbance in the bird, and that after the cloacal infection has subsided the bird is immune to infection of the respiratory tract. Vaccination is a practical and effective method of controlling infectious Laryngo-tracheitis, but *be certain before you vaccinate that the disease your birds have is Laryngo-tracheitis* and not infectious colds or some other type of respiratory trouble which may at times give rise to similar symptoms. Since the vaccine is capable of producing the disease, one should use extreme care in its application. For details concerning the age at which to vaccinate, the appearance of the vaccination take, and the vaccination technique, write to your state agricultural college, consult your local veterinarian, or write to the Department of Animal Pathology, Purina Mills, St. Louis, Mo.

8. LEUCOSIS

Leucosis is a term which has been used rather loosely to include a number of disease conditions in which there is a great increase in the number of certain types of blood cells. Sometimes this abnormal increase of certain cells does not cause changes which the poultryman

himself can detect. However, if a type of cell known as Lymphocytes are greatly increased, a condition is produced which is referred to by the poultrymen as big liver disease. The liver is not only greatly enlarged but may be paler than normal and mottled with grayish, white spots varying in size from a pin point to large, soft, tumor masses. The spleen and kidneys may also be enlarged to several times normal size, and show similar spots. The cause of this condition is not yet definitely known. Many research workers believe that this big liver disease and fowl paralysis are due to the same cause, probably a virus infection. Birds affected with Leucosis may show symptoms of general weakness, loss of weight, and paleness or a jaundiced appearance of the comb and wattles. Sometimes death may occur suddenly without symptoms. Until we know more about this disease and the manner by which birds become infected, the best recommendation in flocks where the disease is known to exist is to remove birds which do not appear to be normal. Affected birds which have maintained normal body weight may be salvaged for food purposes. Insofar as possible, replacement chicks should be purchased from sources in which the disease has not yet occurred. Although measures which may aid in the prevention, control, or treatment of this disease have not as yet been discovered, one should, nevertheless, apply the general principles of sanitation on premises where affected groups have been housed.

9. FOWL PARALYSIS (Range Paralysis)

This disease affecting the nerves of chickens has increased during recent years until it is now one of the most important causes of losses in poultry flocks particularly before and during the pullet laying year. The symptoms of the disease depend upon the nerves affected. Besides lameness, limping or complete inability to stand, there may be drooping of one or both wings. Symptoms of wry-neck may develop by paralysis of the muscles of one side of the neck. Quite frequently, birds which show no symptoms of paralysis may show partial or complete blindness of one or both eyes, accompanied by a change in color from yellowish brown to gray (gray or pearly eye). Many times when the disease affects the nerve supply of the gizzard and intestines, the birds will show symptoms of going light, which may be confused with



Mature bird suffering from range paralysis.

chronic coccidiosis. In fact, some poultrymen have the mistaken idea that coccidiosis causes paralysis. It is true that chronic coccidiosis may and frequently does cause such an advanced state of general weakness (leg weakness) as to be confused with paralysis. With a little practice, one can usually recognize the affected nerves by their enlargement and yellowish discoloration as compared with the normal.

Although paralysis occurs most frequently between the ages of four to ten months, the disease has been observed in chicks four weeks old. Birds which show definite symptoms of range paralysis seldom recover. The disease has been transmitted to healthy birds by inoculating them with the blood or affected nerve tissue from a bird having the disease. Just how the infective agent which is thought to be a virus, is picked up under natural conditions is not understood. We do know that a large per cent of certain matings in breeding flocks will come down with paralysis. Whether this indicates an inherited susceptibility or represents an actual transmission of the disease through the egg as in the case of pullorum disease is not known at the present time. Until more is known about how the disease is spread, one should immediately remove those birds from the flock which are showing symptoms of paralysis. Because of the age at which birds are usually affected, it is assumed that there would be less danger of spreading the disease if birds were not used as breeders until their second laying year.

The purchase of chicks from breeding flocks which are free of paralysis, has also been proposed as a means of avoiding the disease. However, this is not always worked out in a practical way because freedom from the disease may indicate that the birds were never exposed rather than that they were a paralysis resistant strain.

10. FOWL POX (Avian Diphtheria, Canker or Chicken Pox)

This virus disease is highly infectious for birds and may occur in either one or a combination of two forms, namely, pox and diphtheria. This disease is most prevalent during the fall and winter months, but may occur at any season of the year. Although in some outbreaks the death rate is high, the greater economic loss is usually due to unthriftiness and diminished egg production for variable periods thereafter. In the pox or skin form, small wart-like nodules appear on the comb, wattles, skin of the head, and occasionally other parts of the body. These nodules first appear as small yellowish pustules which later become dark brown in color, and often so numerous

*Head of bird suffering from
chicken pox.*

(Photo courtesy of U. S. D. A.)



that they touch each other, forming large, scabby masses. Occasionally pox lesions may be observed on the toes and shanks of young birds, particularly where there has been mechanical injury or picking of these parts in close confinement in batteries. In the diphtheritic or moist form of the disease the mucous membrane of the mouth, tongue, or more particularly, the larynx, show the presence of cheesy masses which adhere very firmly to the tissues beneath and when forcibly removed, leave a raw, bleeding surface. Similar lesions may however be caused by injuries to the mucous membrane. Therefore, individual cases of canker may be due to a sharp particle of litter, weed seeds, barley awn, or similar material becoming lodged anywhere in the mouth cavity. As a rule the diphtheritic form of the disease causes the greater death loss, in that many birds die as a result of suffocation, caused by canker closing off the opening of the larynx.

Dry pox runs a course of approximately one month, accompanied by a general reaction which is so severe as to throw the birds off production for periods ranging from three weeks to two months. The virus causing this disease is usually transmitted directly from bird to bird, although if dried, it may remain infective for long periods of time and be carried mechanically by poultry equipment, persons handling infected birds, or it is capable of being transmitted by mosquitoes. Birds which are already affected should be isolated and kept in clean, dry, well ventilated quarters. Since the birds usually go off feed, every effort should be made to stimulate the appetite and keep the bodily resistance as high as possible. For this purpose, the addition of Purina Nik-Tonik in the proportion of three pounds to one hundred of regular mash is recommended.

After the disease has run its course or the infected birds have been removed the quarters should be thoroughly cleaned and then disinfected with a 3% solution of Purina Cre-so-fec.

Vaccination: If you have had pox infection on your farm or there is a reasonable possibility that your birds will be exposed to this infection, it would be well to vaccinate the oncoming pullet crop at the age of seven to fourteen weeks. The systemic reaction following vaccination during this age period is less severe than when the birds reach maturity. Keeping in mind this matter of post vaccination reaction, *the vaccine*

should never be used on fowls that are suffering from other diseases, or are in a poor state of nutrition because of faulty management, internal parasites or other causes.

For detailed information concerning fowl pox vaccination, we suggest that you communicate with your agricultural college, your local veterinarian, or the Department of Animal Pathology, Purina Mills.

11. FOWL CHOLERA

Fowl Cholera is a widespread disease which is very prevalent in some localities, and is responsible for heavy losses. This disease, which is of bacterial origin, may occur as an acute, rapidly fatal infection, or it may be chronic, producing a lingering disease condition, localized in some organ. In the acute type, the disease appears suddenly in birds which have, apparently, been in normal health, causing death of large numbers within a very few days, and then it may suddenly disappear. Upon opening such birds, one may observe numerous small, yellowish-white pin-point spots on the liver. Also, equally small blood spots in the fat of the heart and gizzard. There may be some inflammation of the intestines. If the bird is in production, a prominent symptom may be a ruptured yolk. Obviously, all cases of ruptured yolk are not due to cholera infection. One cannot be certain that cholera is the cause of the trouble without having a laboratory examination made in which the organism is recovered. Birds which recover from the disease may act as carriers, and therefore, susceptible birds should never be exposed to those groups that have had the disease.

Treatment is difficult, particularly in the acute form of the disease. Sanitation is the keynote in avoiding and eradicating fowl cholera infection. Burn all dead birds. After an outbreak, the houses and equipment should be thoroughly cleaned and disinfected with a strong Purina Creso-fec solution, and the outside runs kept free of birds for a period of several months.

The daily feeding of a half pound of Epsom Salts, mixed with six quarts of moist mash per two hundred birds appears to give beneficial results. The benefits derived from the use of fowl cholera bacterines (vaccines) have been extremely valuable. We suggest that you rely upon the advice of your local veterinarian concerning the use of any vaccine treatment.

12. TUBERCULOSIS

This disease is due to a specific germ which causes a chronic infection and symptoms which are usually only recognized in the advanced stages of the disease. The infection causes round, yellowish, cheesy spots varying in size from a pinhead to a pea or even larger in the liver and spleen and also cheesy lumps along the wall of the intestines. In the case of the liver lesion, poultrymen at times confuse the spots with the small tumors present in big liver disease. Tuberculosis spreads by fowls eating substances such as food and soil infected by the discharges from affected birds. Such unfavorable conditions as crowded pens, filthy houses, and so forth favor the spread of tuberculosis. Losses from this disease do not often occur in birds less than one year old. There are three possible methods of eradicating tuberculosis from a flock. The first consists in disposing of all birds and thoroughly cleaning and disinfecting the house, leaving the yards vacant for a period of several months before introducing new stock. This method is advised particularly where the flock is small. Secondly, since this is primarily a disease of old birds, the disease has been eliminated on many premises by only keeping birds through their pullet laying year. The third method of control is by recognizing infected birds by means of the tuberculin test. This later method is advised in those cases where the disease appears in valuable breeding stock.

13. PHYSICAL MISHAP

Cannibalism—Cannibalism in growing birds and pullets is usually the result of some early brooding or rearing condition that has made the birds uncomfortable. Possibly the chicks were overcrowded in the brooder. There may have been too sudden or too great variation in temperature, or perhaps too high a temperature was maintained throughout the brooding period. It is not unlikely roosting was not started at an early enough age. Often poultry raisers neglect to supply sufficient feeding or watering space.

To overcome cannibalism once it has started obviously we should look at these factors responsible for it and overcome them, or "put them in reverse."

In early brooding it often is wise to darken the brooder house by staining windows with red window stain or by covering the glass with curtains.

Common Poultry Parasites

Mites (*Common Red*): Found in cracks, especially around roosts, dropping boards and nests. When mites are found, clean the house thoroughly and spray with a solution of $\frac{1}{2}$ pint Purina Cre-so-fec, one gallon water and one quart kerosene. Force spray well into cracks where mites hide. Spray part of the house at a time and keep birds out of that portion of the house until the spray has dried.

(*Depluming*): Depluming mites are small and very seldom seen. They work below the skin, causing the feathers to break off at the surface. To get rid of them, clean and disinfect the house as directed above. Rub infected portions of body and surrounding area with an ointment made by mixing one tablespoonful of Purina Cre-so-fec with one cup of melted lard. Do not allow birds in direct sunlight for 24 hours after applying.

(*Scaly Leg*): Birds have large irregular scales and masses on legs. Caused by a very small mite which works under the scales on the legs. Can't be detected with naked eye. Dip shank of bird in kerosene or crankcase oil. Do not get oil on feathers. If scales are bad, soak legs first in warm soapy water. Brush with stiff fibre brush before applying oil.

Lice: Found around vent and below wings. One variety also is found around head and throat. Lice are oblong in shape and usually pale yellow in color. Sometimes clusters of their eggs will be found on feathers below vent. To kill lice, clean the house thoroughly and scrub with a Purina Cre-so-fec solution. Then use Purina Roost Faint on the roosts just before the birds go to roost. Follow the directions for applying as given on the can. The fumes from the Roost Paint permeate the feathers of the bird and

kill the lice. For dusting individual birds or using in dust bath, use Purina Lice Powder.

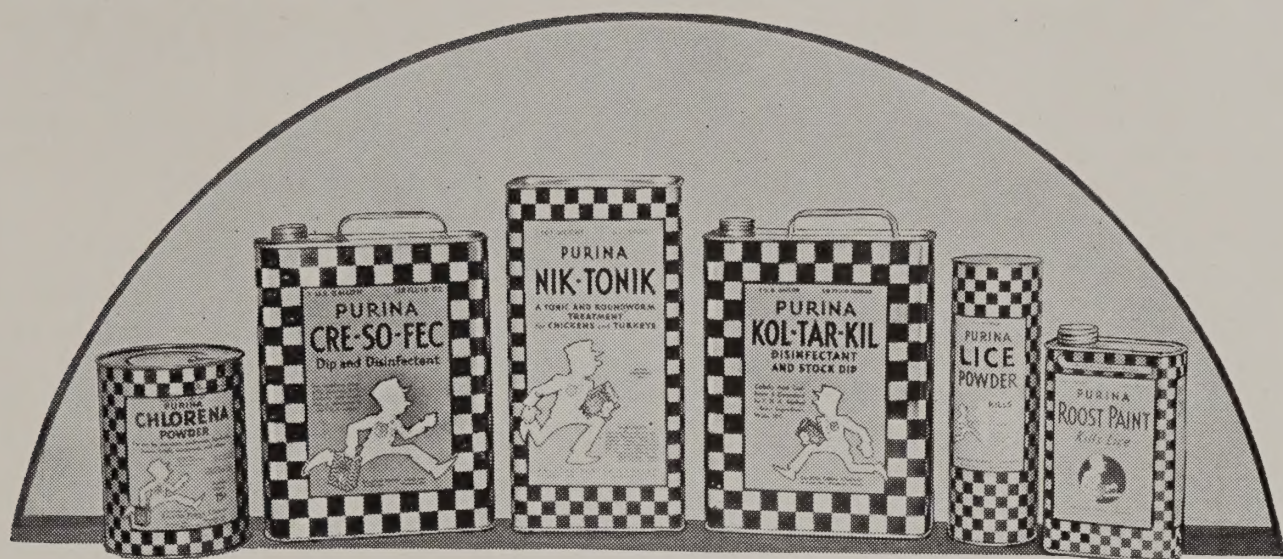
Worms: (Roundworms or Ascarides): If pullets are infested with roundworms they should be wormed before they are put into the laying house. Give each bird one 1-cc. Purina Tetsule. If individual birds in a high producing flock are unthrifty, off feed and off production take them out of the flock, and treat for worms as directed above. The best time to give Purina Tetsules is in the morning when the bird's digestive tract is empty. Do not treat birds in high production for worms.

Tapeworms: When treating poultry for tapeworms, do not fast the birds. Instead feed them well so that the crop is full. Do not give Purina Kamala Kernels to birds weakened by disease or hens in heavy production. If individual birds in a high-producing flock are unthrifty, off production and off feed, and upon diagnosis tapeworms are found, remove the individuals from the flock and treat for tapeworms as directed above.

Give one Purina Kamala Kernel to one or two birds a few days before treating a flock to note its effect. If not satisfactory, call a veterinarian as the birds are probably troubled with some disease as well as worms.

One Kamala Kernel is the recommended dose for birds under six pounds in weight; over six pounds, double the dose. Use one-half gram Kernel for very small and young birds.

When treating birds for both roundworms and tapeworms, do not give both treatments at the same time. Give Tetsule first, and follow three days later with the Kamala Kernel.



Purina Sanitation Aids

Purina Lice Powder

For killing lice and mites on the birds. Comes in handy sift-top tubes. Used in nests and in dust boxes for flock treatment; also for individual dusting of birds.

Purina Kamala Kernels

For the desegmentation of tapeworms in poultry. Contain the most efficient drug known for this purpose.

Purina Chlorena Powder

A new low-cost chlorine germicide for disinfecting feeding and watering equipment. Helps prevent spread of cold, roup and other diseases when used in poultry drinking water. Also used as a dust treatment for birds suffering from respiratory infection.

Purina Kol-Tar-Kil

An exceptionally good coal tar dip and disinfectant available at reasonable cost.

Purina Nik-Tonik

Purina Nik-Tonik is a valuable aid in the control of roundworms (ascarids) and is also a tonic and conditioner for chickens and turkeys. Nik-Tonik may also be used in the treatment of enteritis.

Purina Cre-so-fec

For disinfecting poultry houses, hatcheries, batteries, etc. Also as a dip for lice, fleas and ticks on poultry.

Purina Tetsules

Worm capsules for large roundworms in poultry. Tetsules are safe, sure and economical. The poultry size is 1 c.c.

Purina Roost Paint

New and efficient combination of ingredients for killing lice on poultry. Does not affect birds or stain feathers.





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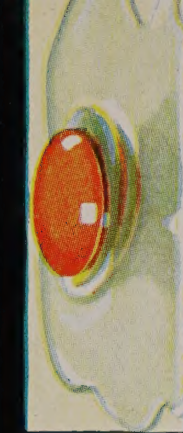
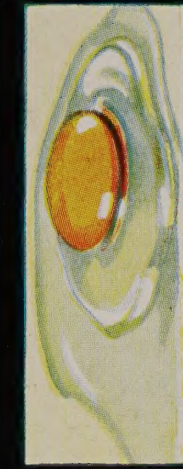
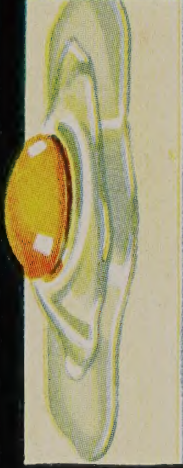
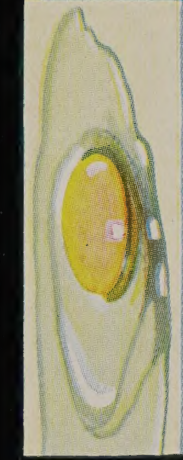
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By packing your eggs in this attractive new Checker-board carton, you immediately identify them as "Layena Eggs" which are known from coast to coast as market eggs of the finest quality. You build up a steady year 'round trade that will make money for you every month in the year. Go to your Purina dealer's store today and get the full details of the new Layena egg plan and free carton offer!

Note: This offer expires Dec. 30, 1939

See the Difference LAYENA Makes!

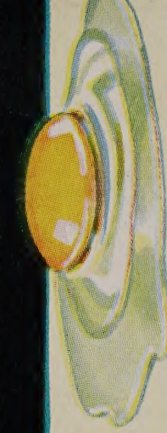
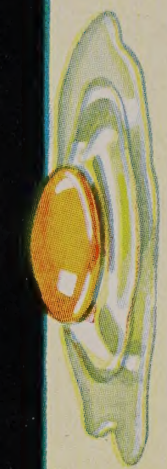
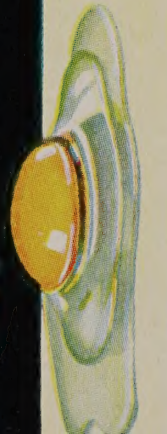
OTHER EGGS



LAYENA EGGS

Eggs produced on ordinary feeds vary greatly in quality. The quality of an egg depends largely on the feed that the hen eats. When hens are allowed to "pick and choose" their feed,

the quality of the egg varies accordingly. Eggs like the ones you see above are unappetizing in appearance, they vary greatly in food value, they will never sell for a premium price.



Eggs produced on the Layena Plan are "alike as peas in a pod." Layena is a complete feed, perfectly balanced to furnish everything a hen needs to lay eggs of superior, uniform quality. The yolks of Layena eggs are just the right shade of light lemon color. The yolks are small in diameter, they stand up high on the whites. Layena eggs are sealed

in strong dense shells, which prevent evaporation and improve the keeping quality. Layena eggs are wholesome and tasty in flavor and are far richer in food value than eggs produced on ordinary feed. Housewives who have used Layena eggs are never satisfied again with eggs produced on ordinary feeds. That's why there's a steady year-round premium market for Layena eggs.



See the Difference PURINA Makes!

